

THE IMPACT AFTER SEVEN YEARS
OF A HIGHWAY IMPROVEMENT
IN A SMALL CITY

MAY 1968

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Joint
Highway
Research
Project

by
E. R. FLEISCHMAN

PURDUE UNIVERSITY
LAFAYETTE INDIANA



Progress Report
THE IMPACT AFTER SEVEN YEARS OF A HIGHWAY
IMPROVEMENT IN A SMALL CITY

To: G. A. Leonards, Director May 9, 1968
Joint Highway Research Project

From: H. L. Michael, Associate Director File No: 3-5-4
Joint Highway Research Project Project No: C-36-64D

Attached is a Progress Report on the HPR Part II Research Project "Highway Impact Studies." This report is titled "The Impact After Seven Years of a Highway Improvement in a Small City." The report has been authored by Mr. Edward R. Fleischman, Graduate Assistant in Research on our staff. The improvement studied was the William Henry Harrison Bridge and its approach improvements in Greater Lafayette, Indiana. The study was performed under the direction of Professor Harold L. Michael.

This is the second report of the impact of this urban highway improvement and it includes many of the findings of the early impact report. In addition the later impact (after seven years) of this facility is documented. Of particular significance is the increased land development, land use changes and increases in assessed evaluation of development in the vicinity of the improvement. The ability of the improvement to handle the increased traffic using it without loss of travel benefits indicates that design of the facility is proving to be adequate.

The report is submitted to the Board for information and comment. It will also be forwarded to the ISHC and the BPR for their review, comment and acceptance as partial fulfillment of the objectives of the research project.

Respectfully submitted,

Harold L. Michael
Harold L. Michael
Associate Director

HLM:nf

Attachment

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Progress Report

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IMPROVEMENT IN A SMALL CITY

by

Edward R. Fleischman
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Joint Highway Research Project

Project No: C-36-64D

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Conducted by

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in cooperation with the
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and the

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The opinions, findings and conclusions expressed in this publication are those of the authors and not necessarily those of the Bureau of Public Roads.

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ABSTRACT

Fleischman, Edward R., MSCE, Purdue University, June 1968. THE IMPACT AFTER SEVEN YEARS OF A HIGHWAY IMPROVEMENT IN A SMALL CITY. Major Professor: Harold L. Michael.

The purpose of this research was to study the effects of a highway improvement upon an urban area. The improvement investigated was the William Henry Harrison Memorial Bridge (U.S. 231) across the Wabash River connecting Lafayette and West Lafayette, Indiana and its approach facilities. Traffic patterns, accidents, land uses, land values, and development of the area near the facility were studied.

Traffic patterns and accidents were analyzed for periods before and after the Bridge opened. The original savings in travel time when the Bridge was constructed in 1960 for the street system near the Harrison Bridge and on Union Street and Salem Street remained in 1967 even though traffic volumes increased. Accidents have increased on streets that were upgraded in use and thus had increases in traffic volumes due to the new bridge.

The land use study showed major changes in land use had occurred east of North River Road in the West Lafayette land use study area. Many multiple dwellings north of the

Bridge and several commercial structures south of the Bridge have been built. Changes in land use also occurred in the Lafayette study area. Several parcels of land which contained residential buildings are now occupied by commercial structures.

Assessed value of property in the land use study area showed an increase between 1959 and 1967 even though a large amount of land and improvements were taken for right of way for the Bridge. A study of specific parcels in the area near the Bridge showed that substantial increases in land value occurred when a land use change in the parcel took place.

INTRODUCTION

The population of the United States is constantly increasing. With this increase in population has also come an increase in the percentage of the population living in urbanized areas. The vehicle registration per person is also rising. These three factors combined have been a major cause of transportation problems in our urban areas. The large volumes of traffic brought about by the increases in these three factors present a difficult challenge to the highway engineer. New facilities must be constructed; old facilities must be reconstructed. Large sums of money have been and will be spent for these improvements.

Unfortunately, money is limited. Today's cities need money to perform a myriad of services for their inhabitants. Money is needed for education, police protection, waste disposal, welfare, etc. The available money must be spent wisely. Space in the congested areas of cities is also limited. When something new is built, something old must be torn down. Accordingly, urban land must also be used wisely.

Thus, highway engineers must have a program that will take best advantage of the money and land available. To achieve this goal, the need exists for an accurate forecast

of changes in traffic patterns that will occur when a proposed facility is constructed. If its effect on travel patterns could be assessed before it is built, adequate planning of the facility could be achieved. Therefore, complete and accurate information is needed on the effect of urban highway improvements on cities.

Highway engineers must also know the socio-economic effects that a proposed highway will have on the neighboring areas. The understanding of these effects is becoming more important than ever before. Organized public resistance to the construction of highways in many urban areas has occurred. One of the main arguments against new highway construction in some areas is that many people feel that highway planners are not giving enough attention to the socio-economic effects of a proposed highway. However, insufficient information is available to fully predict the extent of these effects.

Thus, studies have been or are being made of the impact of highway improvements in urban areas. These before and after studies provide much needed information to highway engineers planning similar facilities in the future. This report is part of one such investigation.

THE IMPACT STUDIES

The Joint Highway Research Project at Purdue University initiated a series of highway impact studies on July 1, 1960 (6). The Project was tentatively scheduled to extend over a period of ten years, during which time information on the effects of highway improvements on adjacent areas was to be studied.

A total of six specific types of highway improvements was chosen to comprise the study areas. These facilities, all of which are major state highways, are:

- Facility 1. An urban by-pass with complete access control;
- Facility 2. A rural highway with complete access control;
- Facility 3. An urban by-pass with little or no access control;
- Facility 4. A rural highway with little or no access control;
- Facility 5. A bridge and its approaches in an urban area;
- Facility 6. A major highway interchange near a metropolitan area.

The facilities corresponding to the types of improvements listed above are (see Figure 1):

Facility 1. The Interstate 65 by-pass around Lebanon, Indiana;

Facility 2. A thirteen mile portion of Interstate 65 from the south end of the Lebanon By-pass to the interchange with Interstate 465 northwest of Indianapolis, Indiana;

Facility 3. The U.S. 31 by-pass around Kokomo, Indiana;

Facility 4. U.S. 31 from the south end of the Kokomo By-pass to the north edge of Marion County, Indiana;

Facility 5. The U.S. 231 Bridge over the Wabash River connecting Lafayette and West Lafayette, Indiana;

Facility 6. The interchange connecting Interstate 65 and Interstate 465 northwest of Indianapolis, Indiana.

Facilities 1, 2 and 6 are continuous portions of Interstate 65 extending from the north edge of Lebanon to approximately eight miles northwest of the central business district of Indianapolis. Facilities 3 and 4 are continuous portions of U.S. 31 extending from the north end of the Kokomo By-pass to the north edge of Marion County.

A study of facility 2 was conducted and submitted in June, 1961 (7,8). A report on facility 5 was completed in

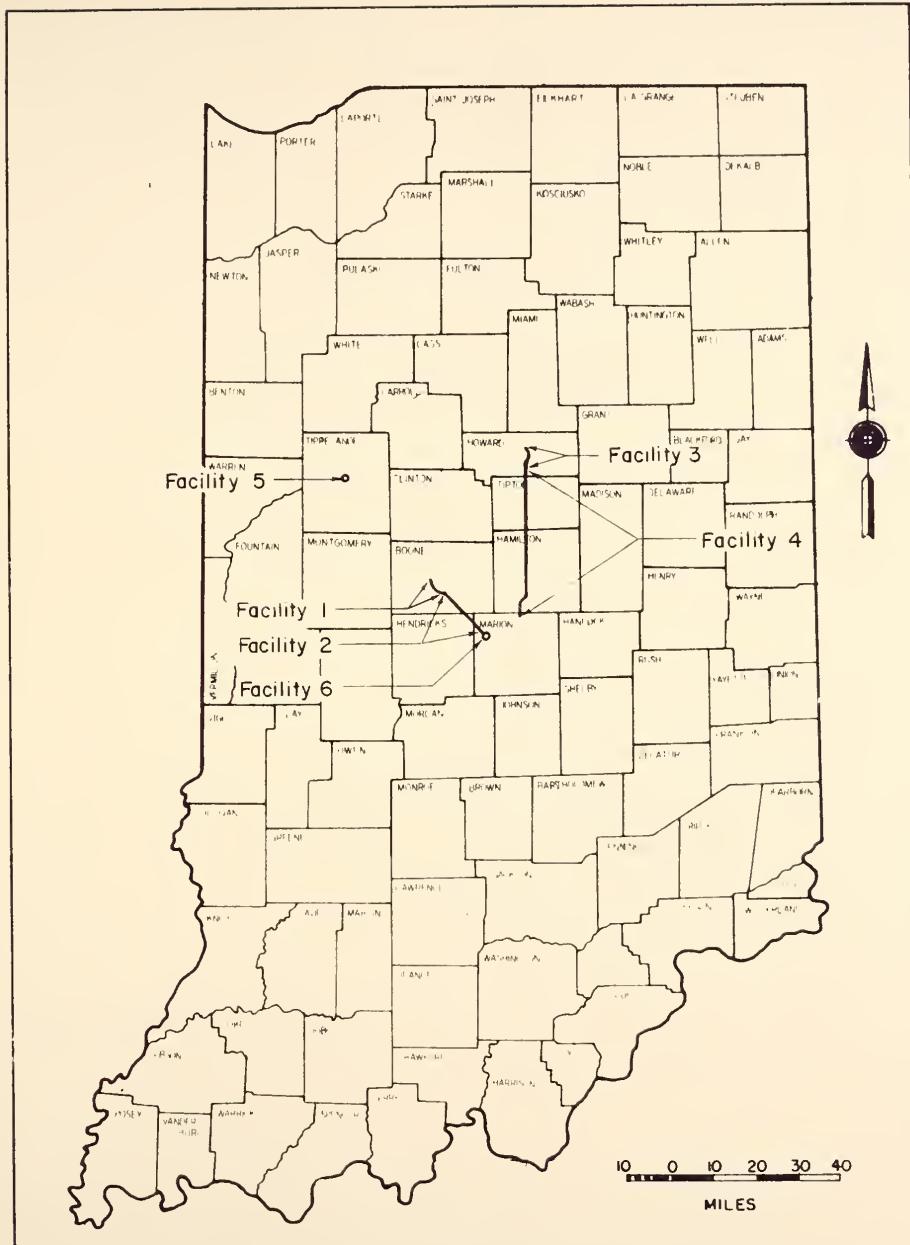


FIGURE 1

LOCATION OF STUDY FACILITIES

May, 1962 (13). In October, 1964, a report was submitted on facility 1 (10). In August, 1965, a report on facility 3 was submitted (4). Presently studies are being continued on all six facilities. This report continues the discussion of information obtained on facility 5, the U.S. 231 Bridge over the Wabash River.

PURPOSE AND SCOPE

The purpose of this research was to study the effects of a highway improvement upon an urban area. The improvement investigated was the William Henry Harrison Memorial Bridge (U.S. 251) across the Wabash River connecting Lafayette and West Lafayette, Indiana, and its approach facilities.

Traffic patterns, accidents, land uses, land values, and development of the area near the facility were observed both before and after it was opened to traffic in November, 1960. Trends in these characteristics were studied since similar changes are likely to occur on other comparable improvements.

A study of tracts involved in partial takings for right of way for this facility was also made. It is often difficult to determine a fair value of land taken for this purpose. Thus the objective of this phase of the study was to determine the effect on land use and land value of properties partially taken for right of way for the Harrison Bridge.

THE STUDY AREA

The William Henry Harrison Memorial Bridge (U.S. 231) was selected for this study for two reasons:

1. it was under construction at the time the study was started, therefore allowing before and after studies to be done;
2. it was in the Greater Lafayette area, which is where Purdue University is located, thus the collection of all pertinent data was simplified with regard to time and manpower.

The Greater Lafayette area is located in the Wabash River Valley in Tippecanoe County in the northwestern portion of the state of Indiana (see Figure 2). It is located 60 miles northwest of Indianapolis, the state capitol, and 125 miles southeast of Chicago, Illinois. The City of Lafayette was first platted in 1826 and incorporated in 1856 while West Lafayette, directly across the Wabash River from Lafayette, was started in the late 1880's and incorporated as a city in 1924 (12).

The Greater Lafayette area has evolved into a dominant agricultural, educational, industrial, and cultural center of North Central Indiana. Heavy industry as well as light industry are well represented in Greater Lafayette;



FIGURE 2 LOCATION OF GREATER LAFAYETTE IN INDIANA

providing a broad economic base.

The area is located in a temperature zone which is subject to neither extremely hot nor severely cold weather. The average temperature for the year is 51.7 degrees with the monthly averages varying from 26.5 in January to 75.6 degrees in July. The average annual precipitation is 38.26 inches (11).

The Lafayette area is well located with respect to transportation. It is readily accessible by highway, railroad, and air. U. S. Highway 52 and State Roads 25, 26, 38, and 45 cross the city and provide connections with the surrounding communities. The city is served by the New York Central Railroad, the Monon Railroad, and both the Nickel Plate and Wabash Lines of the Norfolk and Western Railroad. In addition to this, commercial flights to Purdue Airport are provided by Lake Central Airlines.

Purdue University, located in West Lafayette is the Indiana link in a chain of 68 land grant colleges and universities throughout the nation. Purdue's 1967 enrollment was 23,400 undergraduate and graduate students at this campus. Enrollment is predicted to reach 26,000 by 1970 at the Lafayette campus with added thousands at its regional campuses. The physical plant, valued at \$7.6 million in 1930, exceeds \$206 million today (1967), measured by insurance evaluation. The original faculty of six members in 1874 has grown to more than 2,000. Total

staff, including instructional, administrative, research, extension, clerical, and service exceeds 8,000. The University owns 1,206 acres at the Lafayette campus (5).

Lafayette and West Lafayette have both shown a continuous growth in population. In 1950, their combined populations were 47,441, an increase of 15 percent over the population of 41,300 in 1940. In 1960, their combined population was 55,010 an increase in ten years of 16 percent. The current population exceeds 62,000 (9).

The two cities are divided by the Wabash River (see Figure 3), all traffic between them being carried by four bridges. Thus, the streets around these bridges have some of the major traffic problems in the cities. These bridges are the U.S. 52 By-pass Bridge (two lanes), the William Henry Harrison Bridge (four lanes divided), the Brown Street Bridge (two lanes), and the State Street Levee Bridge (four lanes undivided).

The Harrison Bridge (U.S. 251), the subject of this study, was opened in November 1960. It carries two lanes of traffic in each direction separated by a concrete median. Along with the construction of the Bridge, major approach streets leading to it were either reconstructed or were newly built. Figure 4 shows the limits of construction of the Bridge and its approaches.

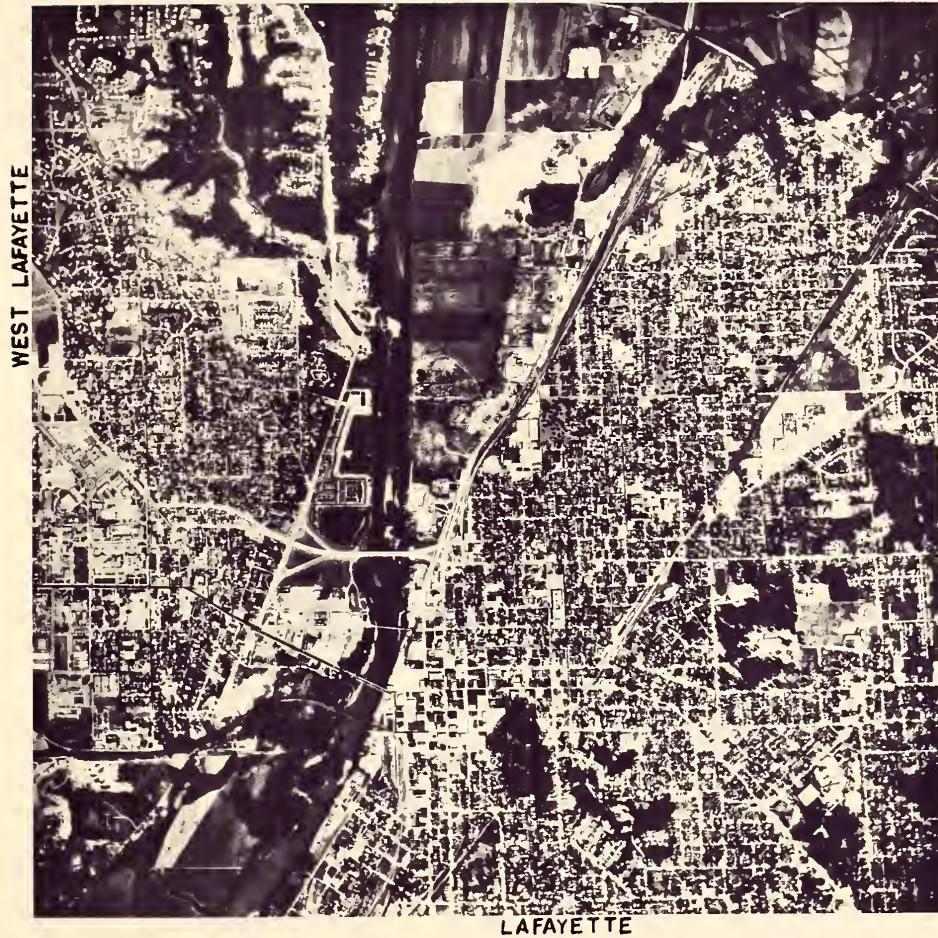


FIGURE 3 AERIAL PHOTOGRAPH OF GREATER LAFAYETTE

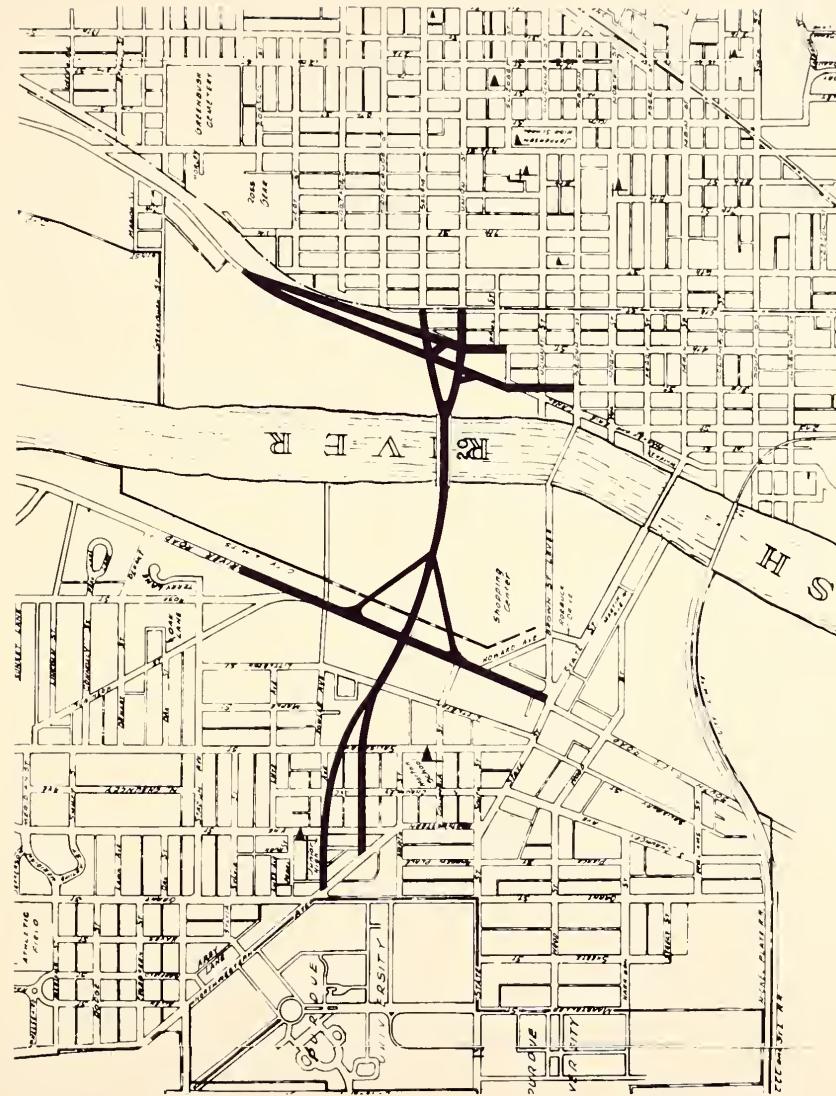


FIGURE 4 LIMITS OF CONSTRUCTION FOR HARRISON BRIDGE

PREVIOUS STUDIES

In 1962, a study of the William Henry Harrison Memorial Bridge was completed by Alan F. Lohr (13). The purpose of that research was to determine the early effects of the Bridge upon the traffic patterns, accidents, land uses, land values, and development of the cities of West Lafayette and Lafayette, Indiana. A before and after study of traffic patterns in the two cities was conducted. A long range study of land use and land value in the area of the new facility was also initiated.

The research indicated that virtually every trip between Lafayette and West Lafayette benefited from the construction of the new bridge through a reduction in travel time. This reduction in travel time was primarily due to an increase in average running speed and/or a decrease in travel distance.

The after study also indicated that the new bridge and its connecting approaches were very effective in diverting traffic around the congested CBD area of Lafayette. A 33% decrease in traffic volumes on the four major east-west streets in this area was found. Increases in traffic volumes on streets that were upgraded to arterials after the Harrison Bridge opened were substantial.

Little changes in land use and land value had occurred when the 1962 study was conducted. Therefore the evaluation of the impact of the new bridge on these factors was not attempted. Changes in land use, though, were noted in parcels of land in which the destruction of existing improvements for right of way was necessary.

An analysis of the final settlement paid to property owners on parcels of land taken for right of way was made. It showed that a greater percentage of the cost for these parcels was due to improvements and much less to severance damages than on rural interstate highways. Final settlements totaled only about two per cent above the high state appraisals.

Economic Impact Studies have been undertaken by many State highway departments and universities. The Bureau of Public Roads has published a report (2) analyzing the results of more than 100 such studies. The report gives a summary of the effects highway improvements have had on the way in which nearby land is developed and its rate of development. Right of way purchases cause the first effect as some land is converted from its previous use to highway use. The report shows that after this first effect, highway improvements frequently help to create conditions that may cause land near the improvement to be developed for new and more intensive uses.

The Bureau of Public Roads report also summarizes the effect of highway improvements on land value. Owners

of property adjacent to new highway improvements generally benefit in terms of land value gains. The amount of influence exerted by the new improvements depends primarily on the type of land use of the property before the improvement and the proximity of the property to the highway. When a change in land use occurs because of an improved highway the most spectacular increases in land value seem to occur. The report shows that a conversion from agriculture or vacant land to residential, commercial, or industrial use produces a high percentage increase in land values.

A summary is also presented in the report on the effect of highway improvements on property tax revenues. Acquiring property for highway right of way usually has the effect of removing property from the tax rolls. This decrease in tax revenues has sometimes caused concern that a tax increase may be necessary for those whose property is not taken. However, studies of the longer range effects of highway improvements show that tax revenues are usually increased at an early date. This is because of the relatively rapid development of vacant land, and by the face lifting and upgrading of older and blighted neighborhoods.

Many studies have also been conducted on the value of remainder parcels after partial taking for the right of way of a new facility. These studies (3,16) indicate that in

most cases, the value of remainder parcels has often been enhanced because of the construction of the new facility.

TRAVEL TIME

Travel time studies, taken on a continuing basis, are an important measure of the efficiency of a roadway. They serve to evaluate the level of service as it changes with the passage of time by providing trend data. A travel time study was conducted in the vicinity of the Harrison Bridge in the fall of 1967. This study was then compared with studies completed in 1960, before the Harrison Bridge opened, and in 1961, one year after the Bridge was in use (13).

All three studies used the average car (test vehicle) method for obtaining average travel times (14). In this method the driver of the test car travels at a speed which in his opinion is representative of the speed of traffic on the street at that particular time. Eight to ten runs for each trip direction were made during the afternoon peak hour, from 4:30 p.m. to 5:30 p.m., on days when Purdue University was in session.

The studies conducted in 1960 and 1961 used a Streeter-Amet Travel-Time and Distance Recorder. This device was developed by the Institute of Transportation and Traffic Engineering at the University of California (15). In 1967, the study was done with stop watches since the amount of information to be collected was less than in 1960 and 1961 (no distance information was required as it

was the same as that collected in 1960 and 1961).

Data were summarized and presented in travel-time contour maps in 1960 and 1961 (see Figures 5 and 6). This same method was used to summarize data in 1967 (see Figure 7). The maps were drawn with the origin of the time contours at the intersection of Northwestern Avenue, Grant Street, and Fowler Avenue in West Lafayette. This intersection joins major routes connecting Lafayette and West Lafayette and thus was chosen as the origin.

As can be seen from the time contour maps of 1960 and 1961, a reduction in average travel time occurred for virtually every trip across the river. Maximum time savings for some trips were as much as five minutes. The time savings extended even to trips which did not use the new bridge, as they generally required one to two minutes less after the bridge was constructed. The 1967 time contour map shows travel times are similar to those in 1961 for the street system near the Harrison Bridge and on Union Street and Salem Street. The original savings in travel time when the Bridge was constructed remained in 1967 on these streets even though traffic volumes increased. This shows that the design of the Harrison Bridge and approaches were adequate for the traffic growth in the seven year period following the opening of the Bridge. The isochronal lines in the vicinity of Main Street are closer together in 1967 than in the 1961 map. Thus, in this area of Lafayette the increase in traffic volume did have an effect on travel time.

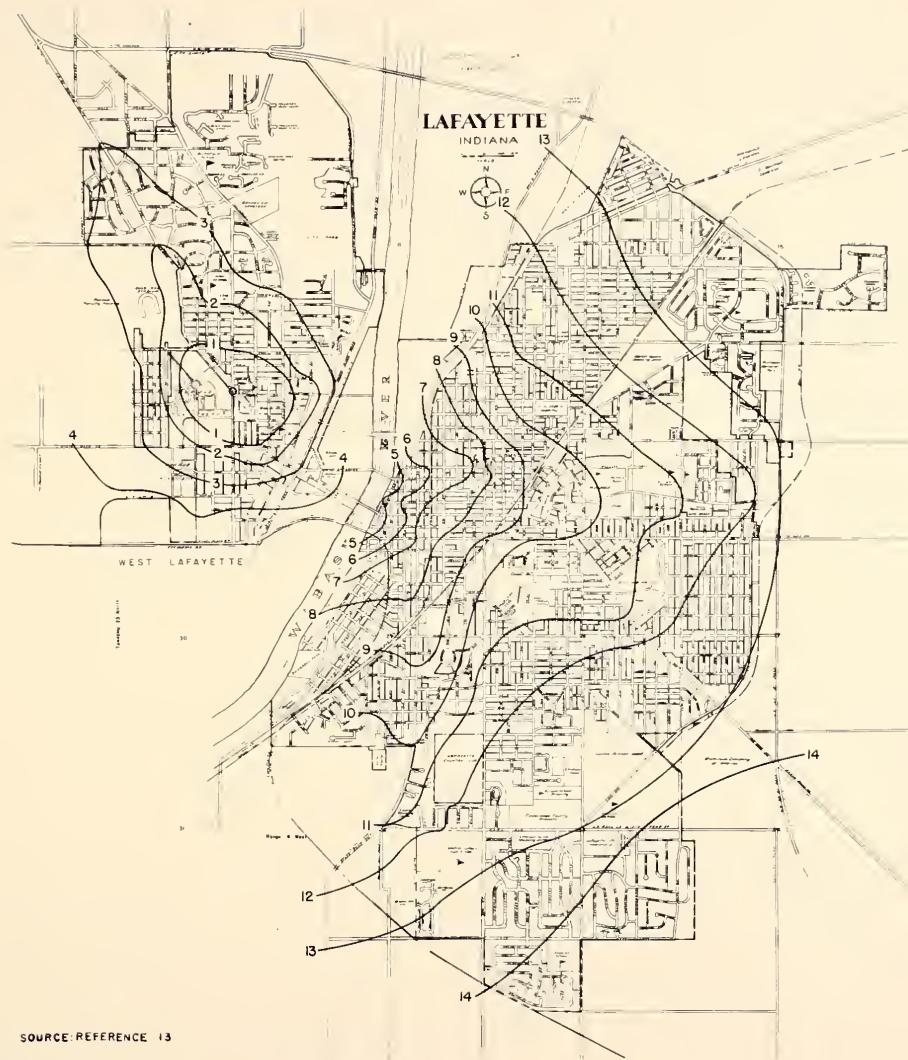


FIGURE 5 TRAVEL TIME CONTOURS IN MINUTES
FOR THE BEFORE STUDY - 1960

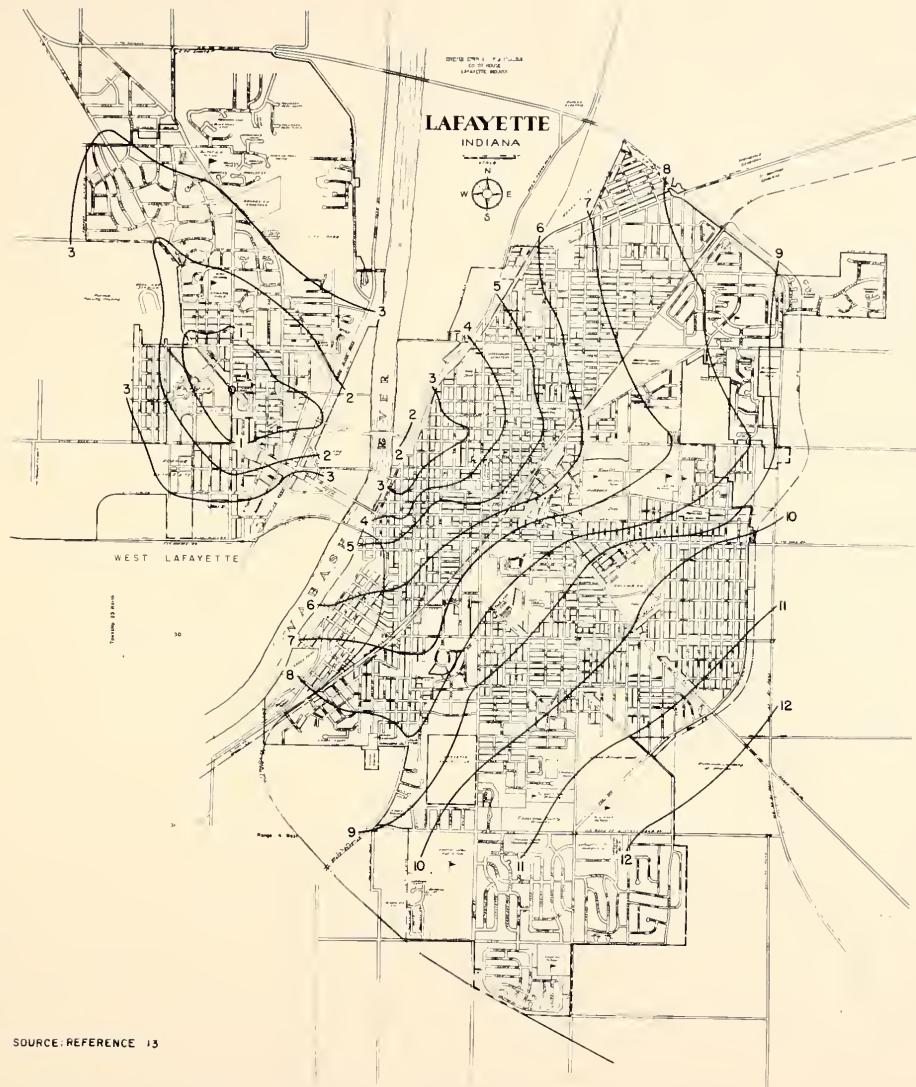


FIGURE 6 TRAVEL TIME CONTOURS IN MINUTES
FOR THE AFTER STUDY - 1961

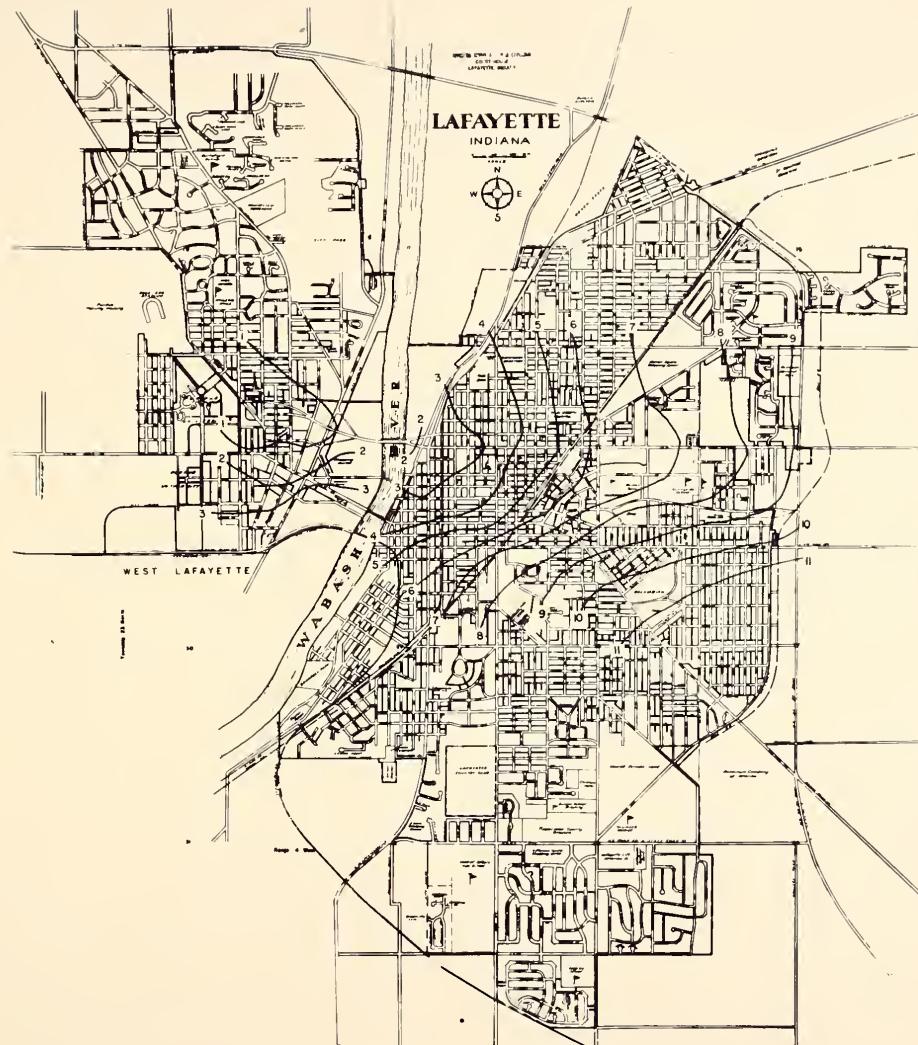


FIGURE 7 TRAVEL TIME CONTOURS IN MINUTES
FOR THE AFTER STUDY - 1967

Comparisons were made on specific routes to show the effect the Bridge would have on travel times on them. Four trips between Lafayette and West Lafayette were analyzed and the average travel time data presented in bar chart form. These four trips were considered typical of the many possible trips which could have been used.

Figure 8 shows the routes used for Trip Number 1. When the routes between trip ends are shown as using more than one street for a portion of the trip, as on this figure, one way streets necessitated it. The trip ends are the intersection of Northwestern Avenue, Grant Street and Fowler Avenue in West Lafayette and the intersection of 9th Street and Brown Street in Lafayette which is near Lafayette Jefferson High School. Figure 9 shows the average travel times for this trip in 1960, 1961, and 1967. The new route still requires less time than the old route that traffic used before the opening of the Harrison Bridge. For the eastbound Trip Number 1, average travel time in 1967 was an estimated 21 seconds less than average travel time in 1961 while westbound times were similar. This may be attributed in part to the replacement of the Four-way Stop at 6th Street and Union Street with a traffic signal. Less stops are now being made as a result by the average vehicle. The Four-way Stop at 6th Street and Salem Street still remains.

In Figure 10, the routes of Trip Number 2 are shown. One trip end is, as before, the intersection of Northwestern

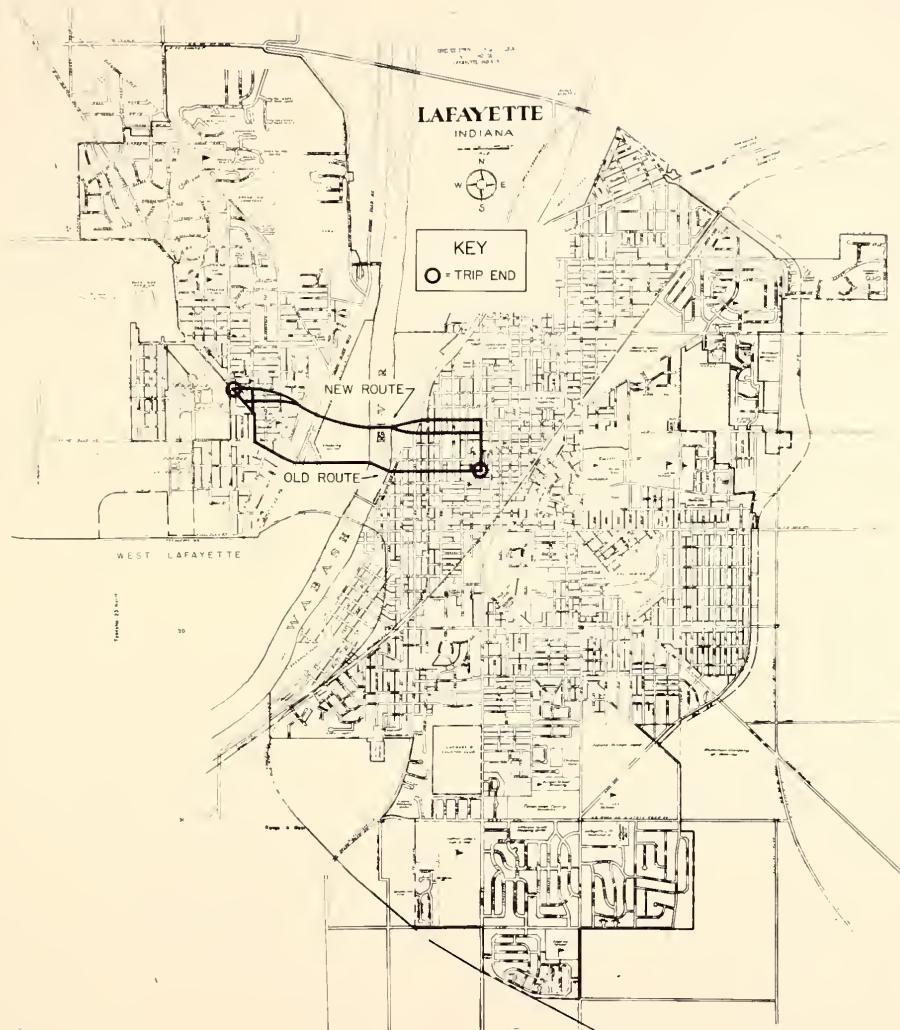


FIGURE 8 TRAVEL TIME STUDY - TRIP NO. 1

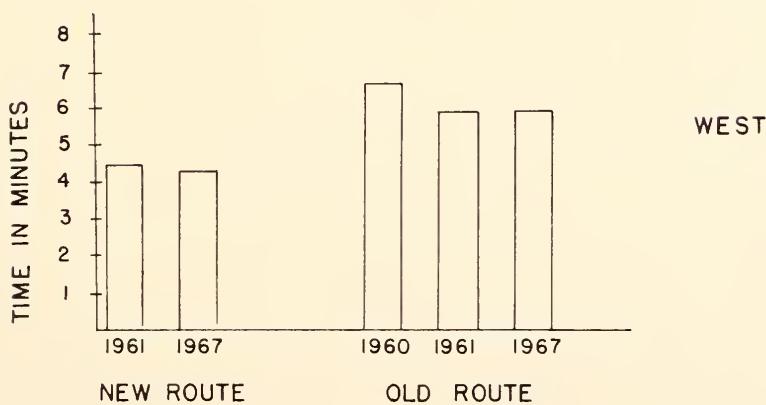
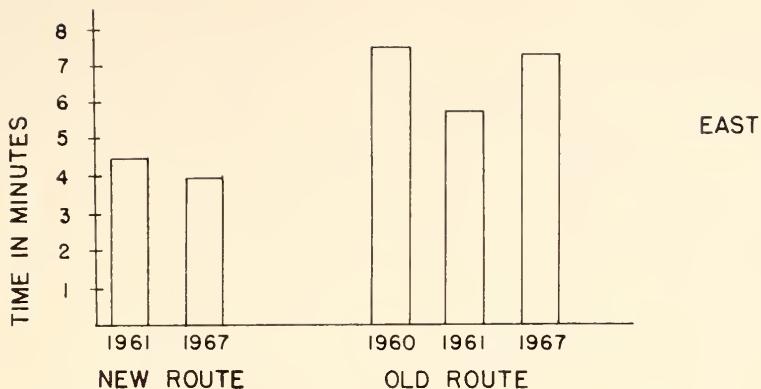


FIGURE 9 TRAVEL TIMES...TRIP NUMBER 1

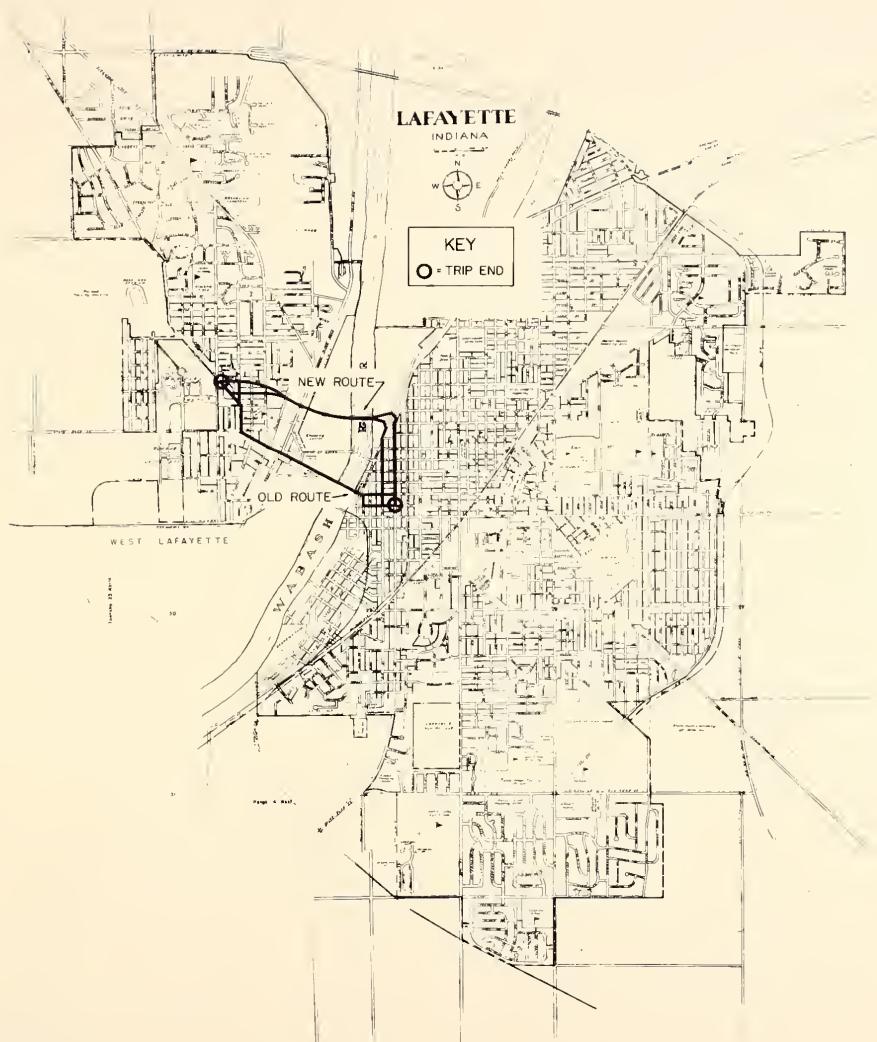


FIGURE 10 TRAVEL TIME STUDY - TRIP NO. 2

Avenue, Grant Street, and Fowler Avenue; the other is the intersection of Columbia Street and 4th Street in the downtown area of Lafayette. The time savings in using the new route are still apparent in 1967 as can be seen in Figure 11. Here again the original reduction in travel time remains seven years after the opening of the Bridge.

Trip Number 5, between the intersection of Northwestern Avenue, Grant Street, and Fowler Avenue and the intersection of U.S. 52 By-pass and State Highway 26 is shown in Figure 12. Comparing the travel times for this trip (see Figure 15), it can be seen that the new route again saves time over the old route both in 1961 and 1967. A wide variation can be noticed in the travel times for the old route. This is probably due to the fact that travel times are very sensitive to traffic engineering improvements. A new traffic signal or a change in lane markings may cause a significant change in travel time. In the downtown area of Lafayette a computer system with synchronized traffic signals, installed after the Harrison Bridge was completed, helped to decrease travel times. The variation of times on the new route is probably due to installation of traffic signals since 1961 at 6th Street and Union Street (1960), 18th Street and Union Street (1964), and Earl Avenue and Union Street (1966). The traffic signals at 6th Street and 18th Street replaced Four-way Stops thus decreasing travel time while the traffic signal at Earl Avenue replaced Stop

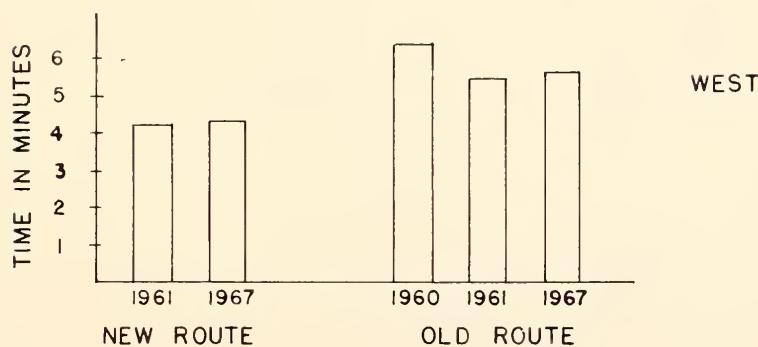
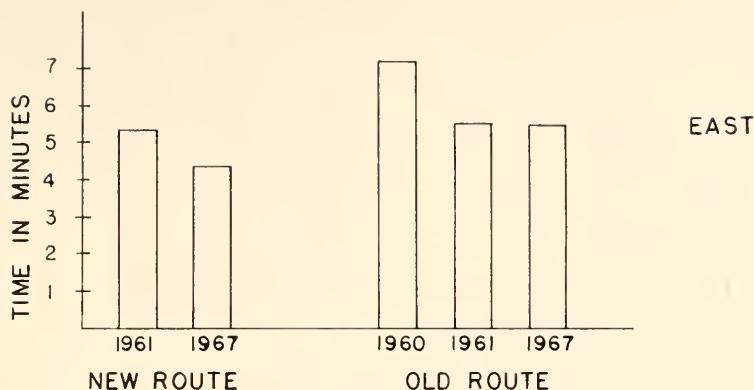


FIGURE 11 TRAVEL TIMES...TRIP NUMBER 2

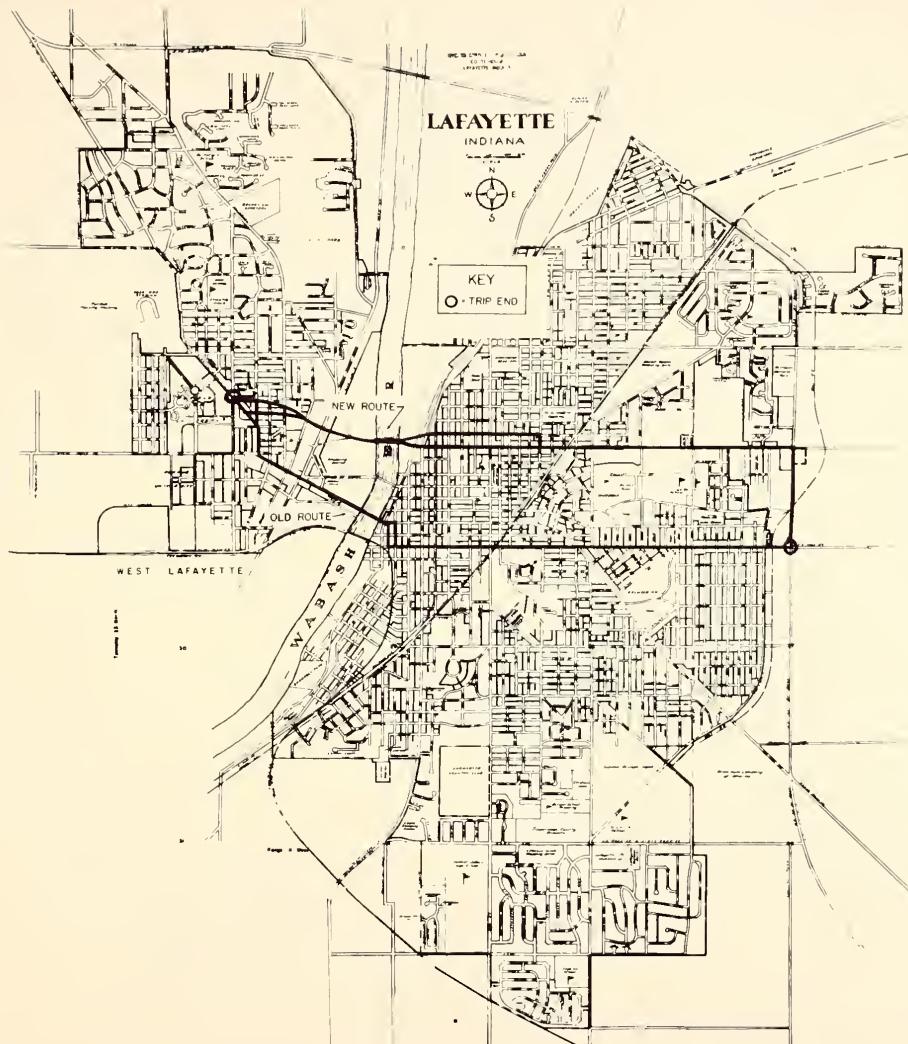


FIGURE 12 TRAVEL TIME STUDY-TRIP NO. 3

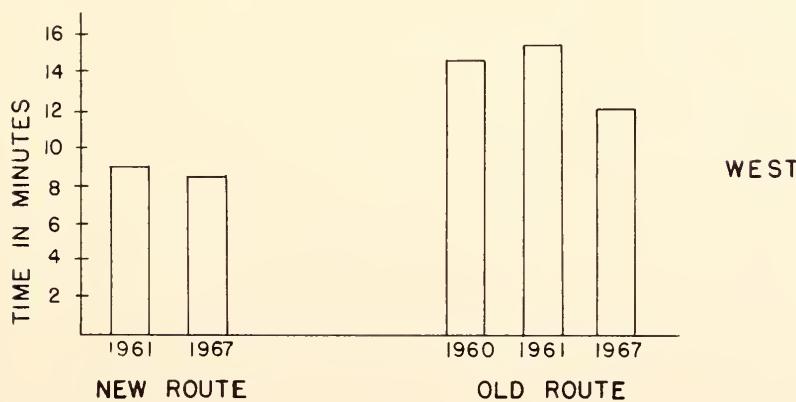
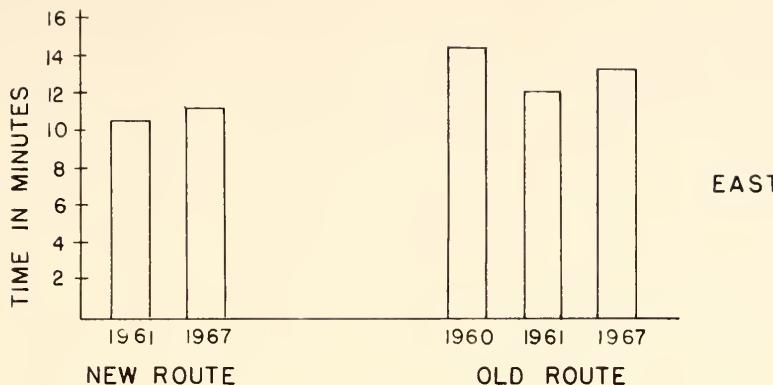


FIGURE 13 TRAVEL TIMES...TRIP NUMBER 3

signs for Earl Avenue traffic thus increasing travel time on Union Street.

Figure 14 shows the location of the routes for Trip Number 4. This trip extends as before from the intersection of Northwestern Avenue, Grant Street, and Fowler Avenue to the intersection of Romig Street and 4th Street. In Figure 15, the travel times are shown. It can be seen that the new route's original reduction in travel time still remains.

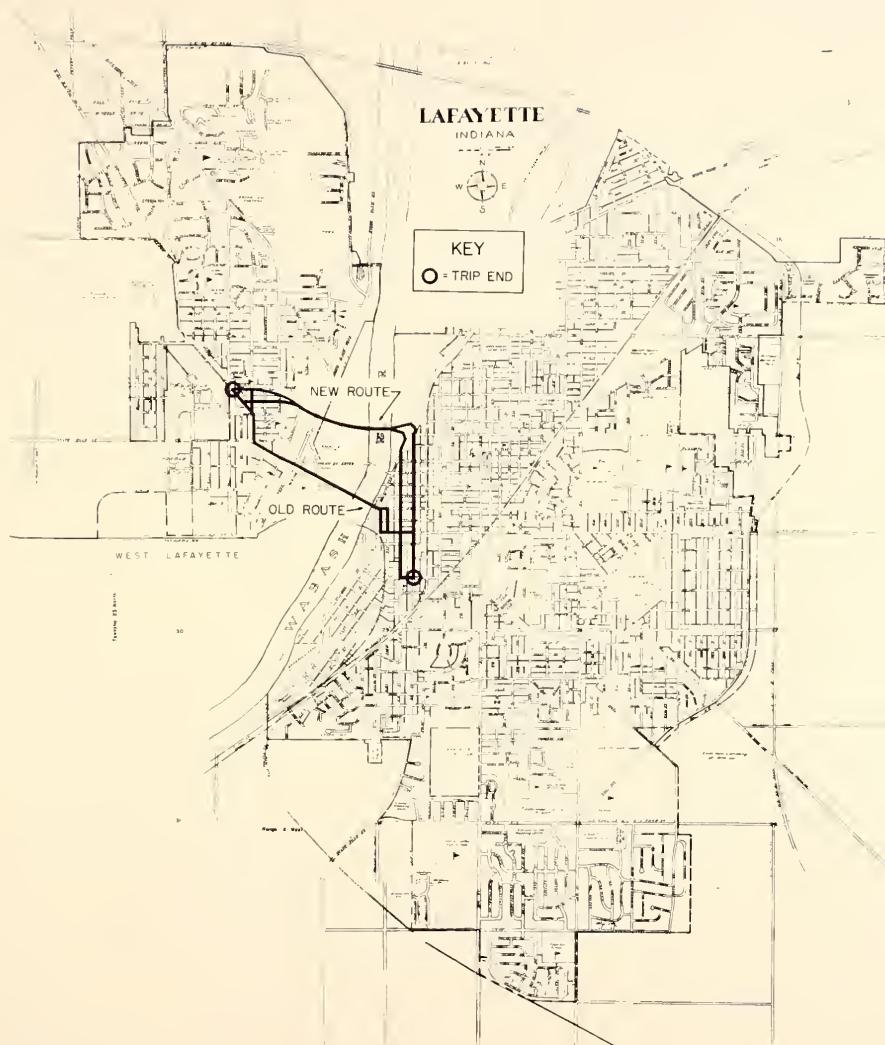


FIGURE 14 TRAVEL TIME STUDY - TRIP NO. 4

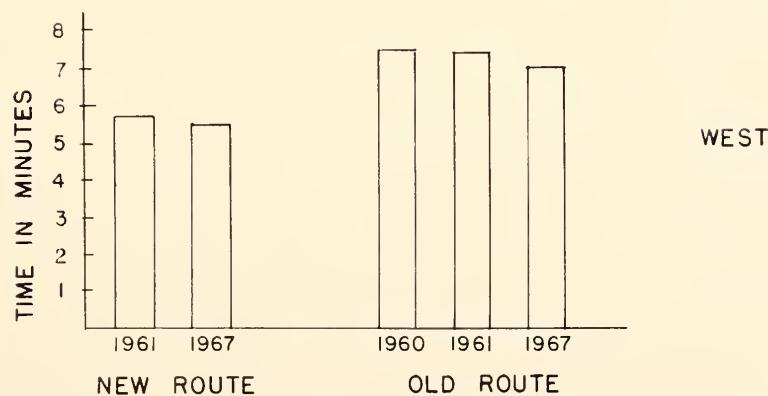
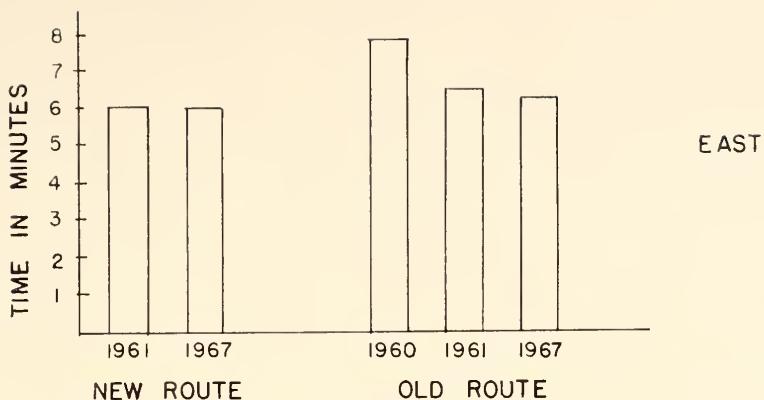


FIGURE 15 TRAVEL TIMES..TRIP NUMBER 4

TRAFFIC VOLUME

Traffic volume counts were taken in the fall of 1967 at various locations in the central area of Greater Lafayette. Thus, they could be compared with counts taken at the same locations where possible in the fall of 1960, before the Harrison Bridge opened, and in the fall of 1961, one year after the Bridge opened (13).

Traffic volume data were collected using automatic 15 minute recording traffic counters. The counters were left in place for 24 hour periods. A control counter was set up on the Harrison Bridge. This counter operated continuously during the counting program. It showed a variation of less than 4% for 24 hour counts during the counting period. As this variation was less than the probable accuracy of the counting program, no correction was applied to the counts taken on different days.

Traffic flow maps for main artery streets in the vicinity of the Harrison Bridge are shown in Figure 16 for 1960, Figure 17 for 1961, and Figure 18 for 1967. Between 1960 and 1961, traffic volume changes occurred on almost every arterial street in the vicinity of the Bridge. Volumes increased on streets that were upgraded to arterials when the Bridge opened and decreased on many streets which

FIGURE 16 MAIN ARTERY TRAFFIC VOLUMES - 1960

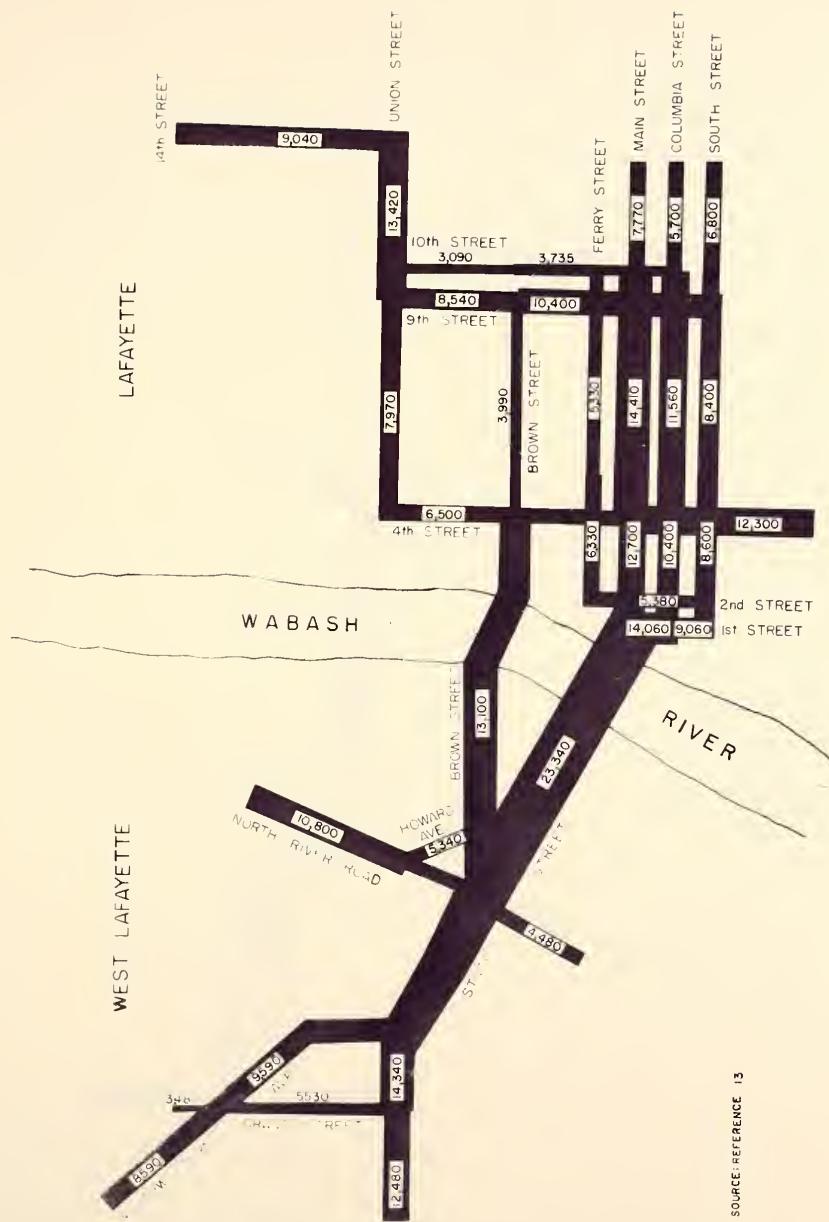


FIGURE 17 MAIN ARTERY TRAFFIC VOLUMES - 1961

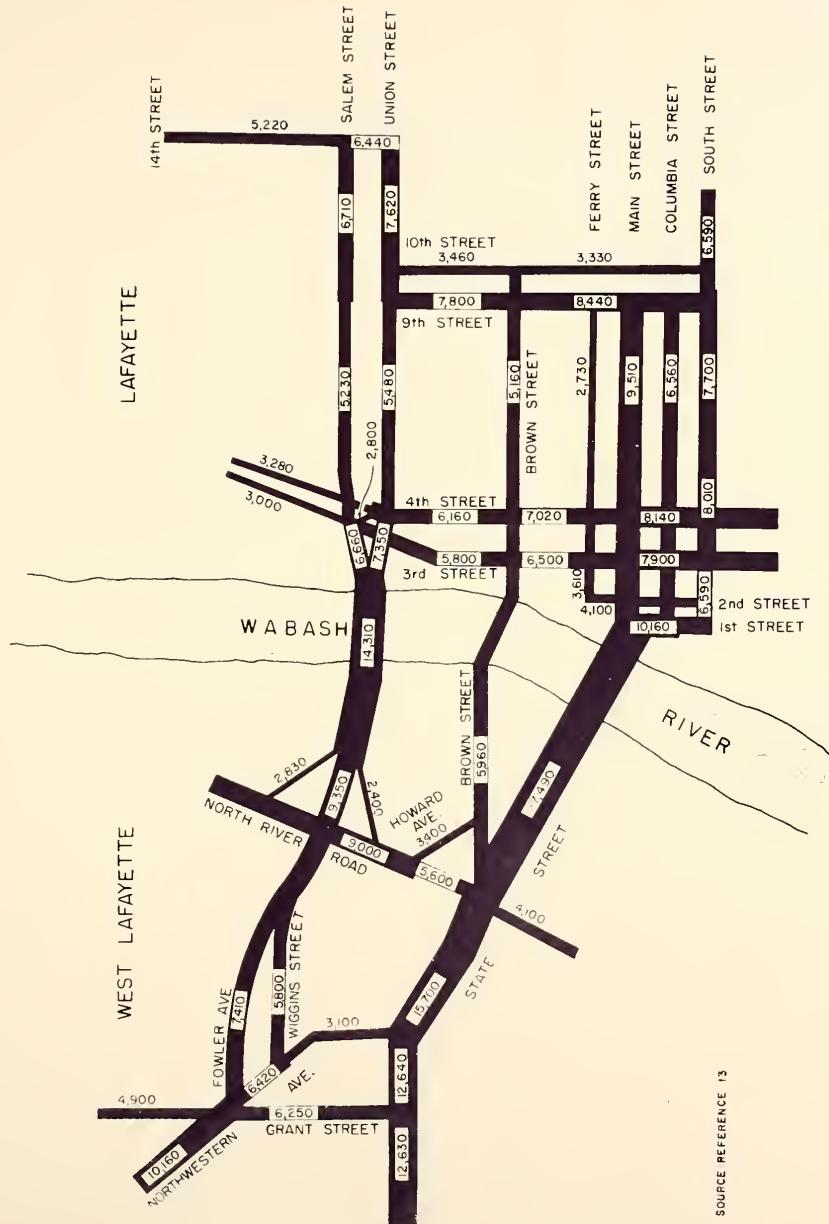
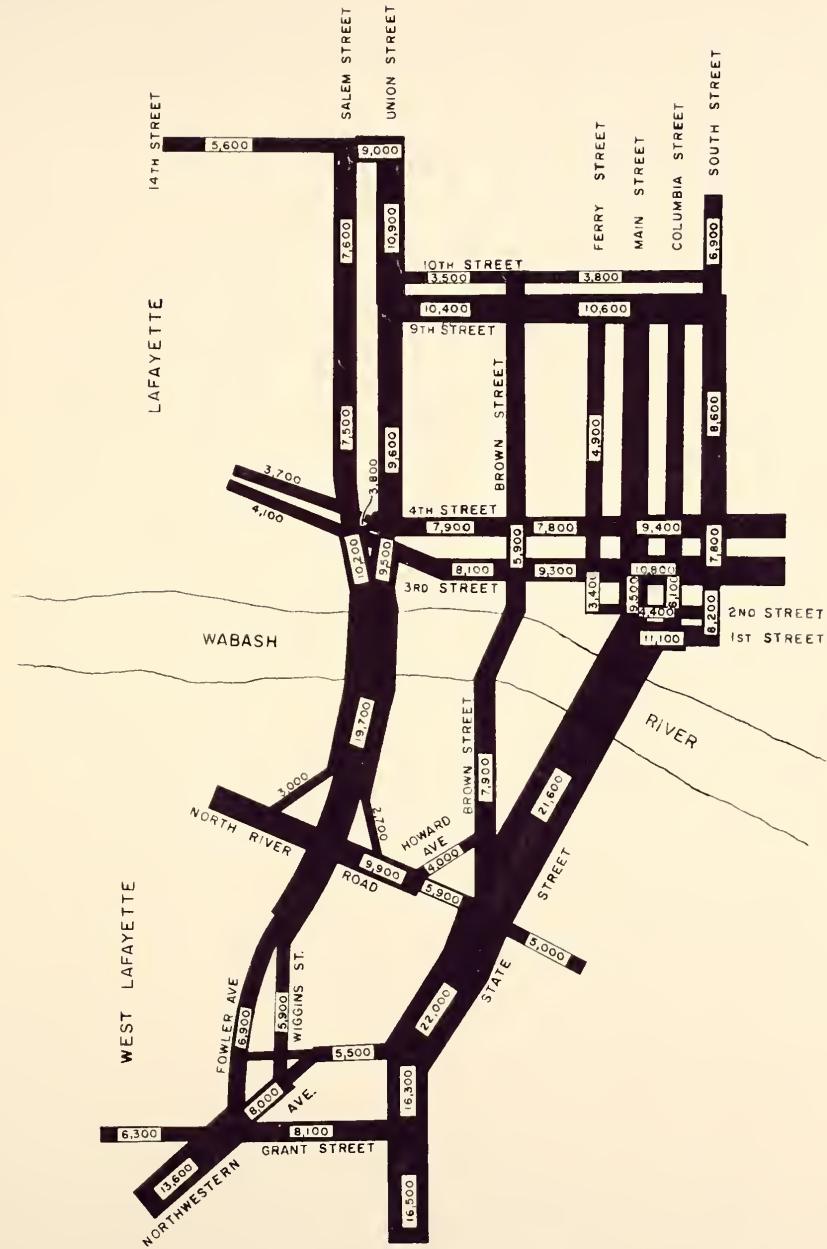


FIGURE 18 MAIN ARTERY TRAFFIC VOLUMES - 1967



carried high volumes before the Bridge opened. Between 1961 and 1967, main arteries show a general increase as was expected.

The 1967 traffic volume counts show that one way east Union Street is carrying more traffic than one way west Salem Street from 14th Street to the Harrison Bridge. This is caused by the greater continuity of Union Street. It extends from the U.S. 52 By-pass to the Harrison Bridge as an arterial while Salem Street extends only from 14th Street to the Harrison Bridge as an arterial. Thus, traffic leaving the Bridge will continue on Union Street because of its length. Traffic approaching the Bridge, because of the shortness of Salem Street, may use alternate east-west routes to reach the Bridge. A better utilization of this one-way couplet will occur when Salem Street is extended out to beyond 21st Street and linked to an improved Union Street, an improvement planned by the City of Lafayette in its thoroughfare program.

In West Lafayette, an increase in traffic volume was expected on Fowler Avenue and Wiggins Street because these streets are direct connectors to the Harrison Bridge where traffic did increase. This expected increase was not observed. This may be due to less local traffic (West Lafayette) use of these arterials in 1967 than in 1961 or to a significant early use of these approaches while new.

It is interesting to compare traffic volumes on the central area crossings of the Wabash River. As can be seen

in Figure 19 traffic volumes took a sharp dip on the Main and Brown Street Bridges after the Harrison Bridge was opened. Since then the three central area Wabash River Crossings have all had increases in traffic volumes. The Harrison Bridge having the greatest increase, the Main Street Bridge second, and the Brown Street Bridge the least increase.

In Figure 20, the percentage of central area Wabash River crossings are shown. The percentage using the Brown Street Bridge has remained fairly constant since the Harrison Bridge was opened. Comparing the percentages using the Main Street and Harrison Bridges show an interesting fact. Increases are occurring on the Harrison Bridge while decreases are occurring on the Main Street Bridge. This is occurring because as was stated above traffic is increasing on the Harrison Bridge faster than the other Bridges. This can be attributed to the fact that travel times on the Harrison Bridge are lower than the Main Street Bridge. Thus, new traffic in the area will select the Harrison Bridge over the Main Street Bridge if both are convenient for the desired trip.

In 1952, the Indiana State Highway Commission estimated that 58.7 percent of the traffic crossing the Wabash River in the central area would use the new bridge if it was there. This estimate was based on a comprehensive origin and destination study that was conducted in the fall

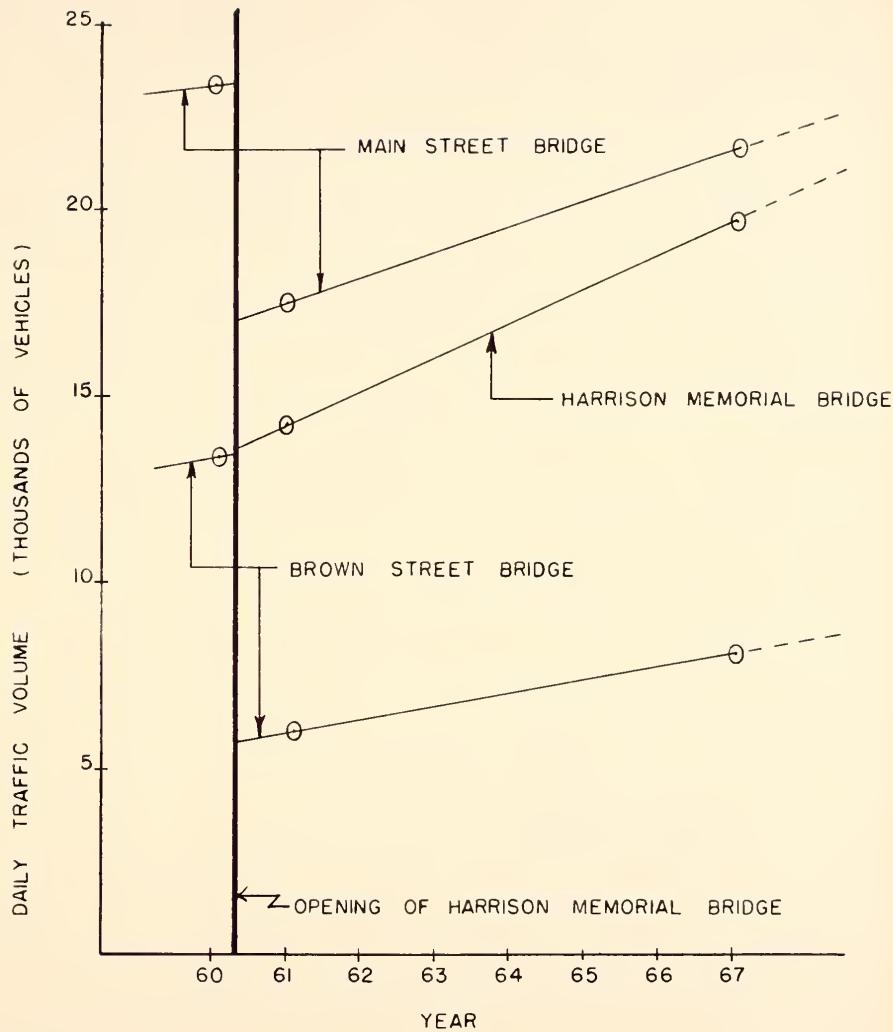


FIGURE 19 CENTRAL AREA WABASH RIVER CROSSINGS VOLUME VS. YEAR

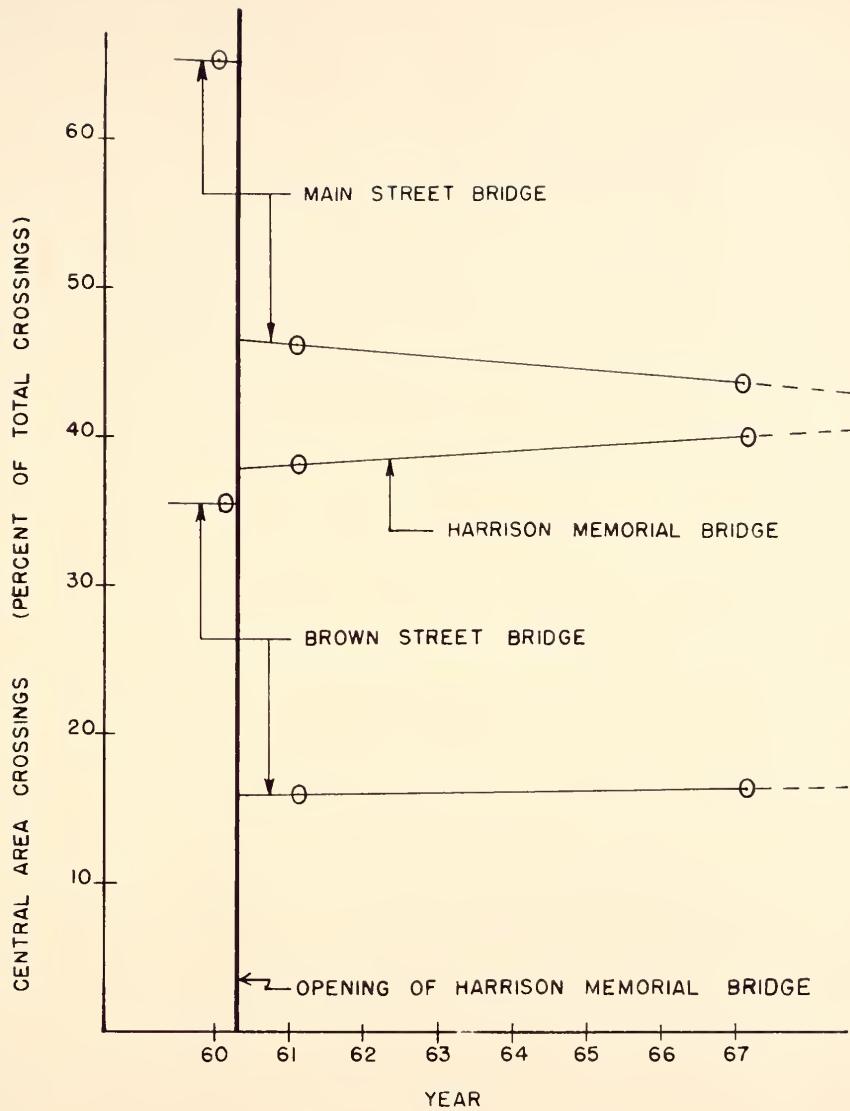


FIGURE 20 PERCENTAGE OF TOTAL CROSSINGS VS. YEAR

of 1952 in Greater Lafayette (12). The traffic volume counts show that in 1961 only 57.9 percent and in 1967 only 40.0 percent of the total traffic crossing in the central area used the Harrison Bridge. Thus, the assignment method used in 1952 estimated too high a percentage of the total central area river crossings would be diverted to the new bridge.

ACCIDENT STUDY

An accident study was conducted on the streets in the vicinity of the Harrison Bridge in Lafayette. The study totaled accidents on those streets for the ten year period from 1957 to 1966. In the analysis of the data, yearly means were calculated for the period of 1957 to 1959, which was before the Bridge opened, and for the three-year periods of 1961 to 1963 and 1964 to 1966, which were after the Bridge opened. Accidents for the year 1960 were not included because this was the year the Bridge opened and thus, major changes in traffic patterns occurred during the year. Table 1 shows the number of accidents in Lafayette by major streets for each of the three periods studied.

A large increase in accidents occurred after the Bridge opened on Union Street and Salem Street, between the Bridge and 9th Street, as can be seen in Table 1. This was as expected since there was a considerable increase in traffic volumes on these streets. Prior to the completion of the Bridge, Salem Street along its entire length and Union Street from the Bridge to 4th Street were local streets. These streets became arterials carrying traffic onto and off the Bridge after its opening. With the

Table 1. Accidents - City of Lafayette.

	Yearly Mean		
	1957-59	1961-63	1964-66
Union St. (Bridge-9th)	10	22	28
Salem St. (Bridge-9th)	3	16	17
Brown St. (3rd-9th)	16	18	20
Ferry St. (3rd-9th)	18	12	17
Main St. (3rd-9th)	36	46	59
Columbia St. (1st-9th)	29	31	43
South St. (1st-9th)	23	27	38
9th St. (Salem-South)	29	26	40
4th St. (Romig-Salem)	39	44	48
5rd St. (Romig-Salem)	8	35	35
2nd St. (Main-South)	3	7	7
1st St. (Main-South)	7	5	7
Total City Accidents	752	1011	1352
County Vehicle Registration	37,868	42,898	49,967

upgrading in use of the streets came a corresponding increase in traffic volumes which resulted in an increase in accidents.

In connection with the building of the approaches to the Harrison Bridge, 3rd and 4th Streets were changed to one way operation and 3rd Street was lengthened to include intersections with Salem and Union Streets. Third Street had been a local street while Fourth Street was an arterial street before the Bridge was opened. A sharp increase in accidents from 8 per year, before the Bridge opened, to 35 per year, after it was opened, occurred on 3rd Street. This increase in accidents was due to the increase both in length and traffic volume that took place when this street was upgraded to an arterial. The accidents on 4th Street show a small and steady increase consistent with the steady increase in traffic volume. Most other streets in Lafayette show a steady rise in accidents caused by a steady rise in traffic volumes and therefore in the vehicle miles traveled.

At the intersections of 3rd and 4th Streets with Union and Salem Streets, which were reconstructed when the Bridge was built, traffic signals were installed late in 1961. Yearly accident totals at these four intersections are as follows:

1961	31
1962	19
1963	25
1964	21
1965	31
1966	34

The large number of accidents occurring before the traffic signals were installed dropped immediately after the installation. Then a steady increase occurred as the traffic volumes also increased steadily. The traffic signals were included in the original design of these intersections.

Accidents for the period 1959 to 1966 are summarized for West Lafayette in Table 2. The before period is 1959 while the yearly means for the periods of 1961 to 1963 and 1964 to 1966 are used for the after period. Again, the year 1960 was not used because of the major changes in traffic patterns which occurred during the year.

From Table 2, it can be seen that on Fowler Avenue and Wiggins Street no accidents took place in 1959, but a number of accidents are now occurring each year on both streets. This may be explained by the fact that both streets were upgraded from local streets to arterials and therefore both streets experienced a large increase in traffic volumes. There was no significant change in accidents in the periods of 1961 to 1963 and 1964 to 1966 because the traffic volumes remained approximately the same during both periods.

Table 2. Accidents - City of West Lafayette.

	1959	Yearly Mean 1961-65	1964-66
Brown Street	32	14	18
Fowler Avenue	0	6	12
Wiggins Street	0	15	12
Robinson Street	6	8	10
Northwestern Avenue	76	50	93
River Road	15	13	24
Salisbury Street	21	27	43
State Street	130	140	215
Total City Accidents	491	556	795
County Vehicle Registration	37,868	42,898	49,967

Northwestern Avenue which carried large volumes of traffic through the business district of West Lafayette showed a drop in accidents after the Bridge opened. This is because a portion of this traffic was now routed onto Fowler Avenue and Wiggins Street. This decrease is noticed only during the years of 1961 to 1963. As the traffic volumes increased, including in the West Lafayette business district, accidents also increased as shown in the number of accidents taking place in the years 1964 to 1966.

State Street had a decrease in traffic volumes after the Bridge was opened. This was reflected in the accident data in that the percentage increase in accidents along State Street was less than the percentage increase in total city accidents. Brown Street had a large decrease in volume after the Bridge opened. A decrease in accidents is evident between 1959 and the period from 1961 to 1963 and the period 1964 to 1966. However, as volumes increased between 1961 to 1963 and 1964 to 1966, accidents also showed an increase in the latter period.

Accident rates were determined for the arterials in the central area of Greater Lafayette for the before years of 1957 to 1959 and for the after years of 1961 to 1963 and 1964 to 1966. The values obtained were:

1957 to 1959	11.4 accidents per million vehicle miles
1961 to 1963	12.7 accidents per million vehicle miles
1964 to 1966	16.6 accidents per million vehicle miles

The accident rates indicate that the Bridge may have had some effect on the rate in the central area of Greater Lafayette. As volumes increase and therefore as vehicle miles increase, the accident rate has been found to also increase (1). The percentage increase in the accident rate, however, for the period 1957 to 1959 to the period 1961 to 1963 was much less than the increase from 1961 to 1963 to 1964 to 1966. Travel in the central area, however, increased rather steadily during these periods. The only major change in the central area arterial system occurred in 1960 with the opening of the new Bridge and its approaches. The small increase in the accident rate between 1957 to 1959 and 1961 to 1963, therefore, may have been due to this significant change, the Harrison Bridge.

Increases and decreases in accidents did occur on certain streets near the Bridge. Where traffic volumes increased, the number of accidents increased. Where traffic volumes showed a large decrease, accidents went down. Where traffic volumes showed a small decrease, accidents often did not decrease but the percentage increase was slower than the percentage increase for the entire city.

Accidents were also studied at major intersections that carry high traffic volumes onto and off the Harrison Bridge. Collision diagrams were drawn for traffic accidents that occurred after the Bridge was opened at these intersections. A total of seven intersections was studied, three in West Lafayette and four in Lafayette.

Figure 21 shows the collision diagram for the intersection of Vine Street and Wiggins Street in West Lafayette. A large number of right angle collisions have occurred at this intersection. Thirty-six occurred in 38 months before the installation of a traffic signal in February 1964. One such accident occurred in the first 34 months following signal installation. A Stop sign controlled traffic approaching the intersection on Vine Street before the traffic signal was installed. Traffic turned onto Wiggins Street from Northwestern Avenue less than one block before the intersection. The right angle collisions can be attributed to the fact that traffic that stopped for the Stop sign on Vine Street pulled into the intersection thinking it was safe to do so. Traffic making the turn onto Wiggins Street from Northwestern Avenue was sometimes hidden from view until it was too late. Thus, poor visibility of oncoming traffic made the Stop sign ineffective. The traffic signal virtually eliminated this type of accident.

The collision diagram for the Harrison Bridge Exit Ramp in West Lafayette is shown in Figure 22. The greatest number of accidents occurring in this area is near the Yield sign for vehicles wanting to go north on North River Road. This is probably caused when two or more vehicles approach the Yield sign. Drivers behind the first vehicle at the sign may expect that this first vehicle will merge

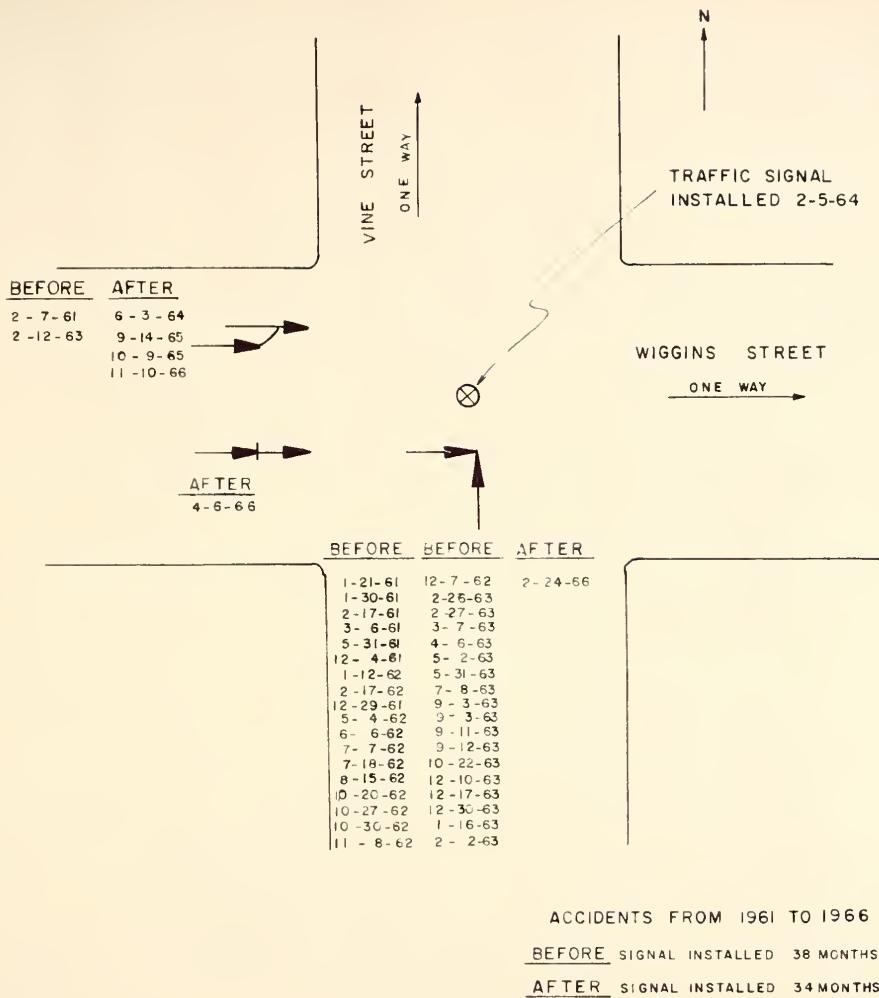


FIGURE 21 COLLISION DIAGRAM FOR INTERSECTION OF VINE AND WIGGINS STREETS

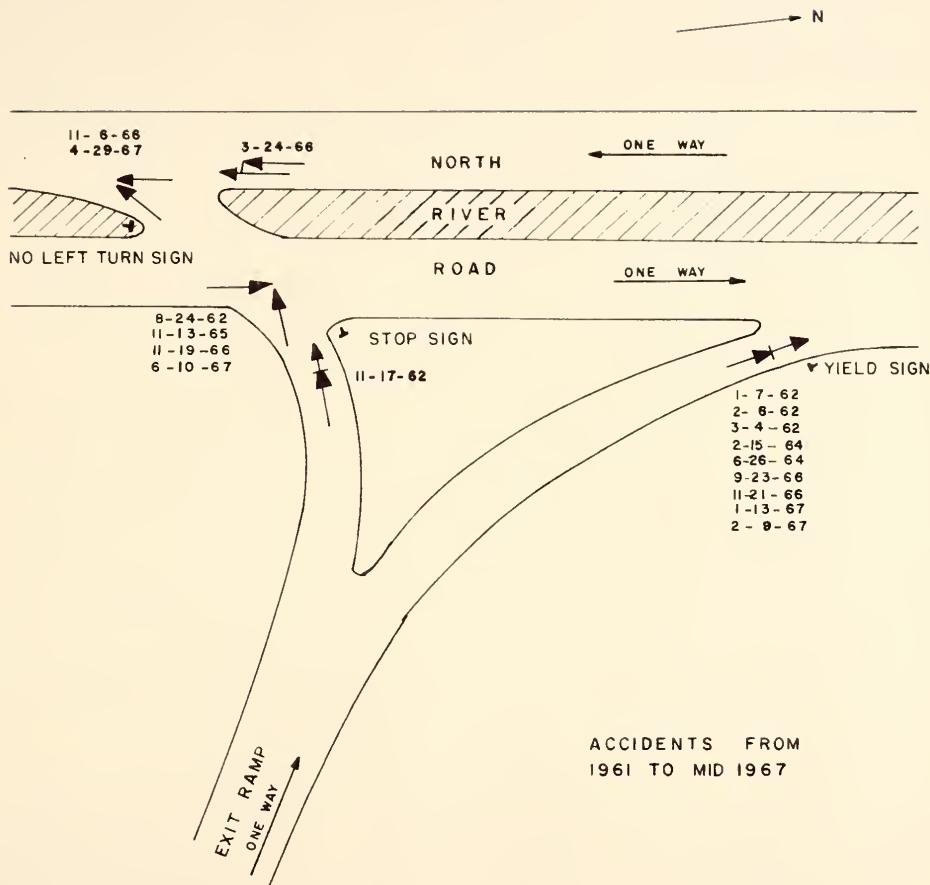


FIGURE 22 COLLISION DIAGRAM FOR HARRISON BRIDGE
EXIT RAMP, WEST LAFAYETTE

into the traffic stream. If this vehicle stops before merging, the rear vehicle may collide into the rear of the first vehicle. Perhaps a replacement of the Yield sign with Merging Traffic signs would minimize the accidents at this location.

The collision diagram for the Harrison Bridge Entrance Ramp in West Lafayette (see Figure 23) shows this same type of accident. The use of Merging Traffic signs at this location instead of the Yield appears also to be warranted. Figure 22 also shows that a number of right angle collisions have occurred at the exit ramp. This is probably caused by left-turning vehicles not stopping or pulling away from the Stop sign before they should, although visibility at this point is good. A larger Stop sign, a second Stop sign on the left side of the ramp or a Stop Ahead sign might be of value at this location.

At the intersection of Salem Street and Third Street in Lafayette, 50 percent of the right angle collisions during 1961 to 1966 occurred before the traffic signal was installed. This is shown in Figure 24. This is a very high rate for the before signal period if the time periods of before and after the signal was installed are taken into account. The main cause of the right angle collisions before the signal was operating may be that the angle of approach makes for poor visibility at this intersection.

Figure 25 shows the collision diagram for the intersection of Salem Street and Fourth Street. Right angle

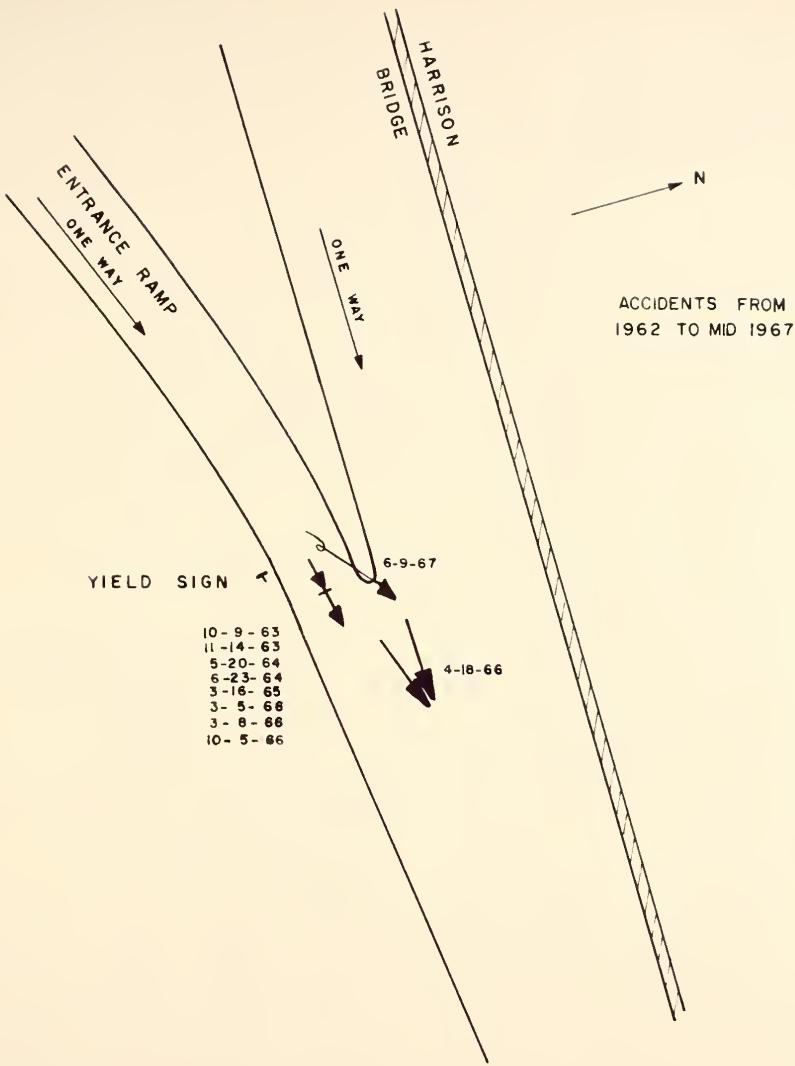


FIGURE 23 COLLISION DIAGRAM FOR HARRISON BRIDGE
ENTRANCE RAMP, WEST LAFAYETTE

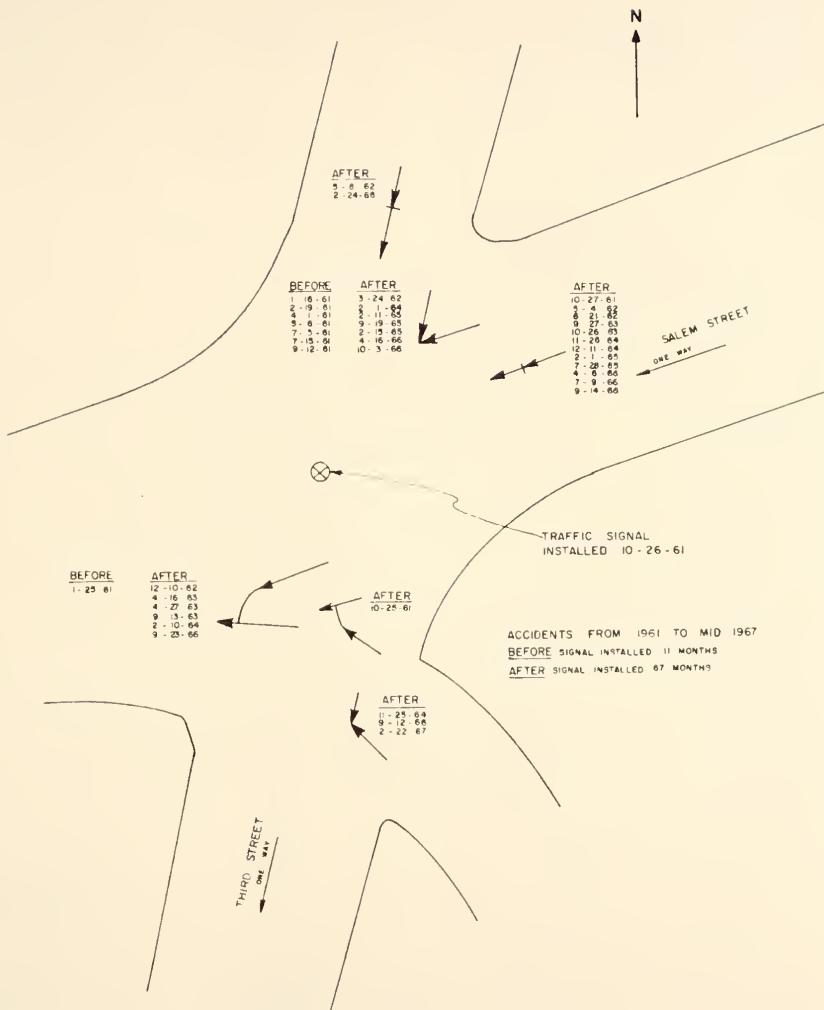


FIGURE 24 COLLISION DIAGRAM FOR INTERSECTION OF SALEM AND THIRD STREETS

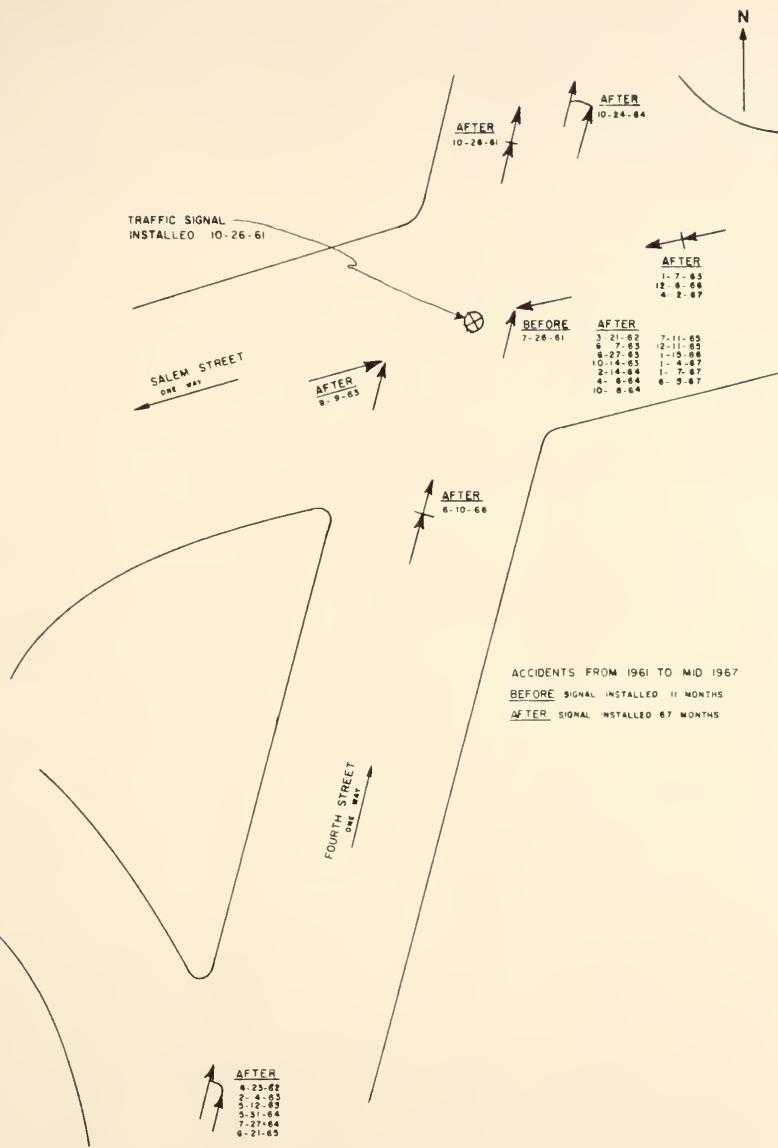


FIGURE 25 COLLISION DIAGRAM FOR INTERSECTION OF SALEM AND FOURTH STREETS

accidents are occurring at this intersection even though there is a traffic signal. This can only be attributed to vehicles illegally entering the intersection. This occurs mainly at the end of the green phase on Salem Street when traffic on Salem Street may try to enter the intersection on the yellow phase or the beginning of the red phase. Accidents are also occurring on the entrance to to left turn lanes to the Harrison Bridge from Fourth Street. This type of accident is the sideswipe. Vehicles may be shifting lanes at this location since two lanes are provided for left turning traffic. Better pavement markings should correct this situation. Vehicles in the left lane on Fourth Street should be required to turn left at Salem Street and stay in the left lane of the two left turn lanes.

The collision diagram for the intersection of Union Street and Fourth Street is shown in Figure 26. At this intersection a large number of right angle collisions have taken place. Many occurred before the traffic signal was installed. This was due to poor visibility of the traffic stopping for the Stop sign on Fourth Street. Right angle collisions that occurred after the traffic signal installation are probably attributable to vehicles on Union Street entering the intersection illegally. A number of rear end collisions have occurred in the right turn lane for traffic on Fourth Street turning into Union Street.

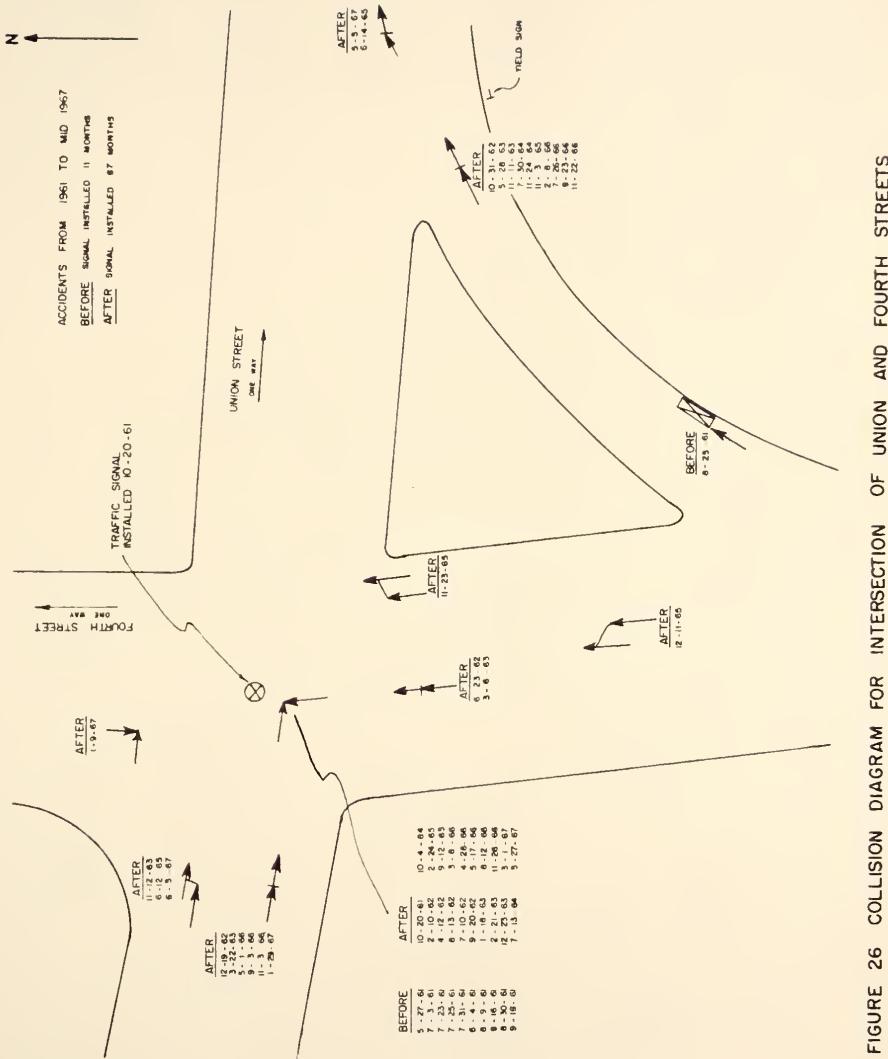


FIGURE 26 COLLISION DIAGRAM FOR INTERSECTION OF UNION AND FOURTH STREETS

Some traffic will stop at this point while other traffic will not. Accidents may occur if two or more vehicles approach the Yield sign close together. A vehicle following the front vehicle too closely may collide with the front vehicle if an unexpected stop occurs. Some improvement in this situation could be provided if a lane for this right turn traffic was provided on Union Street. This would be possible with the removal of parking on Union Street on the south side between Fourth and Fifth Streets, marking of three traffic lanes and permitting only exit traffic to use the north-south alley between Fourth and Fifth Streets. Merging Traffic signs could then replace the Yield sign.

The last intersection studied was the intersection of Union Street with Third Street. The collision diagram is shown in Figure 27. As in previous intersections, rear end collisions are occurring at the Yield sign. This is probably caused by the same reasons cited earlier. The conditions at this intersection are such that Merging Traffic signs might be used instead of the Yield sign. Right angle accidents are also occurring at this intersection even though a traffic signal exists. This is attributed to, as before, vehicles entering the intersection illegally on the yellow or red phases.

Part of the problem of vehicles illegally entering the four intersections of this complex at the east end of

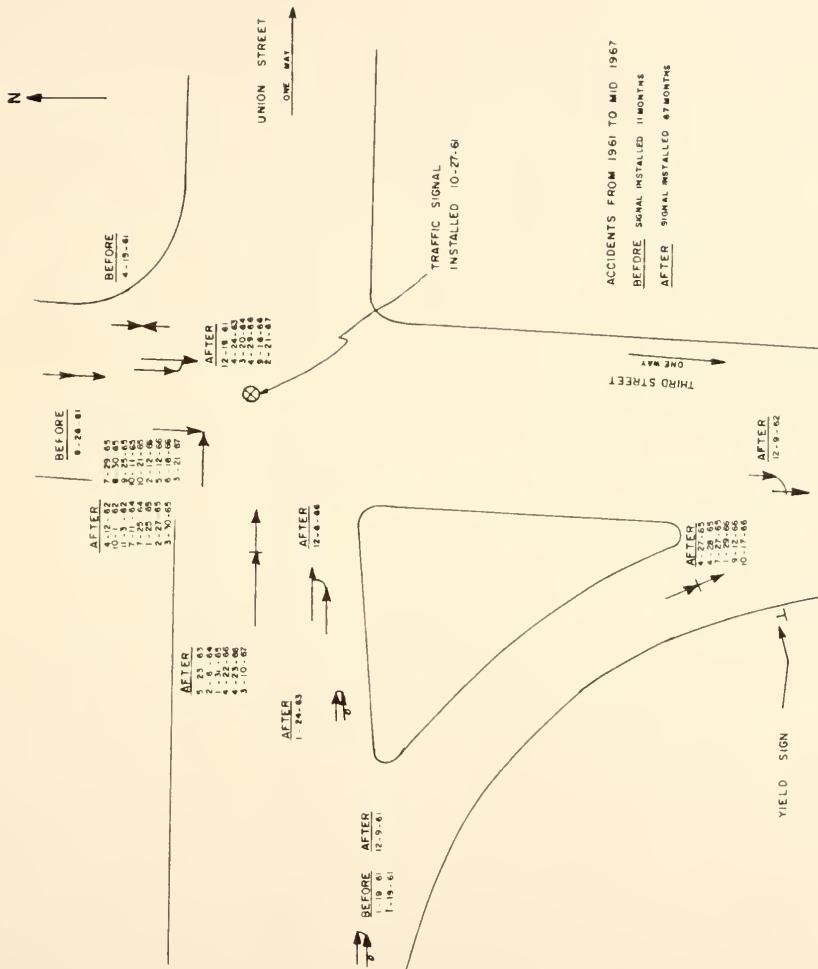


FIGURE 27 COLLISION DIAGRAM FOR INTERSECTION OF UNION AND THIRD STREETS

the Bridge may be the signal timing. For example, traffic traveling south on Third Street must pass two traffic signals at Salem Street and Union Street. Because of the proximity of these two signals, vehicles passing through the first signal on green (or even yellow) probably feel that they should get through the second signal without stopping. The signal timing is not set this way. Both signals end the green cycle at the same time. By letting the second signal have a few extra seconds of green time at the end of the present green phase, the problem may be minimized. If this could be done for all four intersections, thus considering them as one large intersection, the right angle accidents that are now occurring at each location might be significantly reduced.

At each of the signal installations discussed, a number of rear end collisions are also occurring. This type of accident is typical for signalized intersections and no technique for minimization has as yet been developed.

LAND USE AND LAND VALUE

An important measure of the economic effects of a highway improvement is the change in land use and value that occur during and after its construction. However, there exist many different factors in a community which influence development. In this study of the Harrison Bridge (U.S. 231), attempts were made to isolate and analyze the influence on land development and land value change exerted by the Bridge.

Zoned land use for undeveloped land and actual land use for developed areas around the Bridge during its construction are shown in Figure 28. A more detailed land use study was made on an irregular area around the Bridge and its approaches. This study area, shown in Figure 29, extended one to two blocks from the approaches.

Land use patterns that were analyzed were obtained from field reconnaissance. Data were obtained in 1959, one year before the Harrison Bridge opened to traffic, for the study area (see Figures 30 and 32). In 1962, another survey was taken. At that time few land use changes were noted. The major land use changes that had occurred resulted from the destruction of existing development in connection with the construction of the Bridge. Thus a few residences,

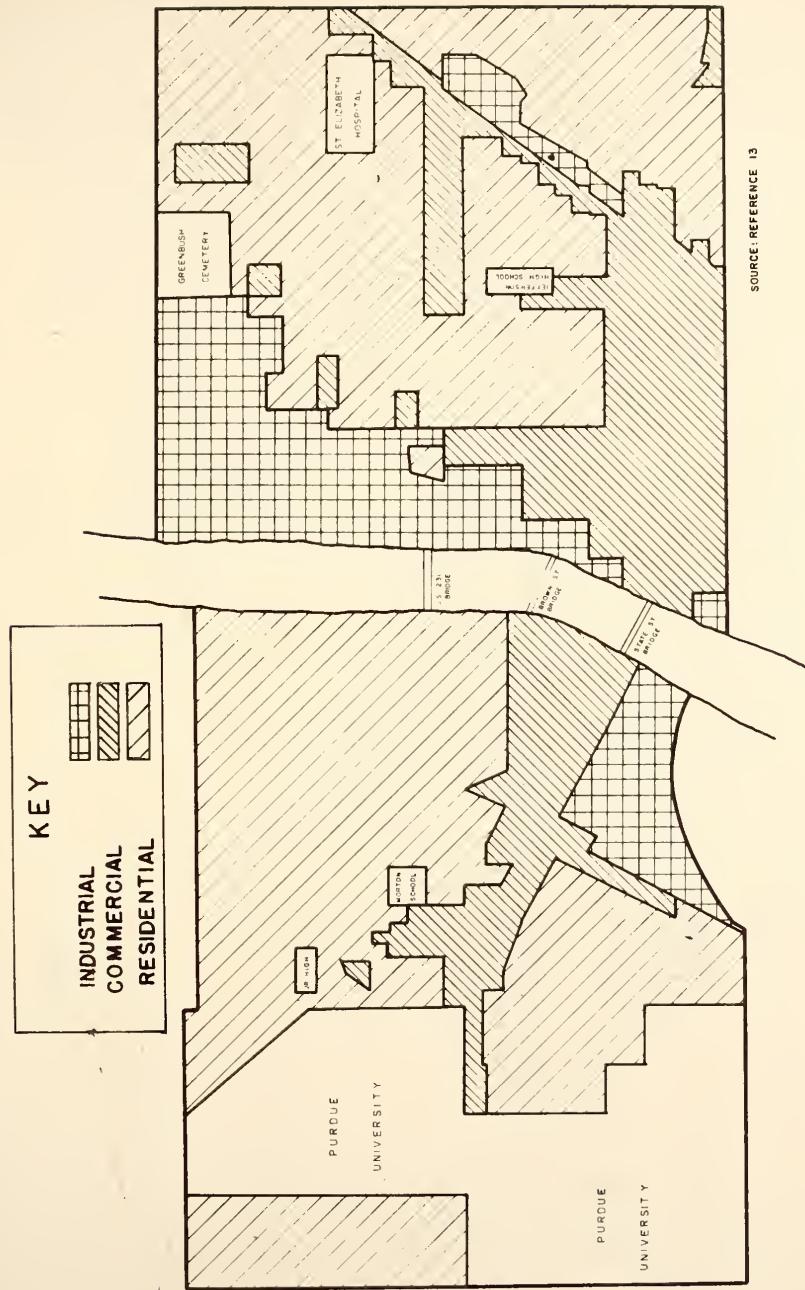


FIGURE 28 LAND USE IN THE VICINITY OF THE HARRISON BRIDGE

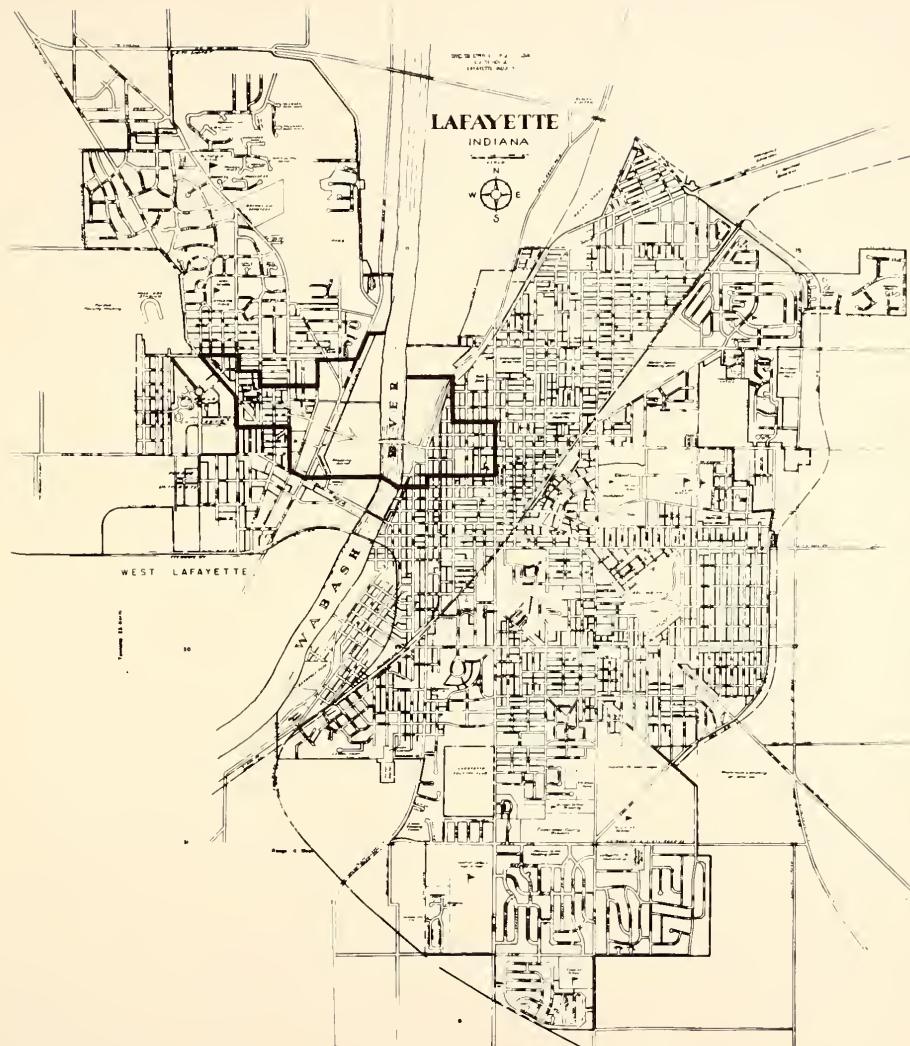


FIGURE 29 LAND USE STUDY AREA

several commercial buildings, and a few industries were torn down. Land use maps were also drawn for the data obtained in a 1967 survey. This is presented in Figures 31 and 33.

The land use map of the West Lafayette study area in 1959 shows that most of the area west of North River Road contained single and double family residential buildings, rooming houses, and fraternities. The land east of North River Road was mostly vacant except for commercial development on Brown Street. Most of the vacant land was low bottom land. It was occasionally under water and thus was unsuitable for development without being filled.

The map of land use in West Lafayette in 1967 shows a major change in use of land east of North River Road. Two types of development are occurring. North of the Harrison Bridge a series of multiple dwellings have been constructed. This development is called Williamsburg on the Wabash. South of the Harrison Bridge, commercial development along Brown Street is extending north towards the Bridge.

Two multiple dwellings have been constructed on parcels of land which were partially taken for right of way purposes for the Bridge. This is shown at the intersection of the approaches to the Bridge and Littleton Street on the 1967 land use map. This map also shows a new Purdue University parking lot which is located on Northwestern Avenue. The

Harrison Bridge and approaches help expedite traffic to this parking lot. Thus, the Bridge was a factor in the location of the parking lot at that site. Purdue University plans to erect a parking garage on the parking lot site possibly by 1971.

The 1959 land use map of the Lafayette study area shows a concentration of light industry, public utilities, and railroad property from 4th Street to the Wabash River. The rest of the study area contained single and double family residential buildings and rooming houses, with some other land use types scattered throughout.

The Lafayette land use map of 1967 shows a few parcels of land that are now vacant along Union Street on the north side of Union Street between 4th and 7th Streets. These parcels had contained residential houses. The land is expected to contain commercial development in the future. A parcel of land between Salem Street and Union Street at 4th Street is shown as public land. This parcel was bought by the State when it assembled the right of way needed for the construction of the Bridge. It is still owned by the State and plans are to landscape and leave as an open space for protection of the capacity and safety of the intersection. A few other land use changes have occurred in the area, mainly from residential to commercial uses.

Figure 34 shows a series of aerial photographs of the Harrison Bridge area. These pictures were taken facing

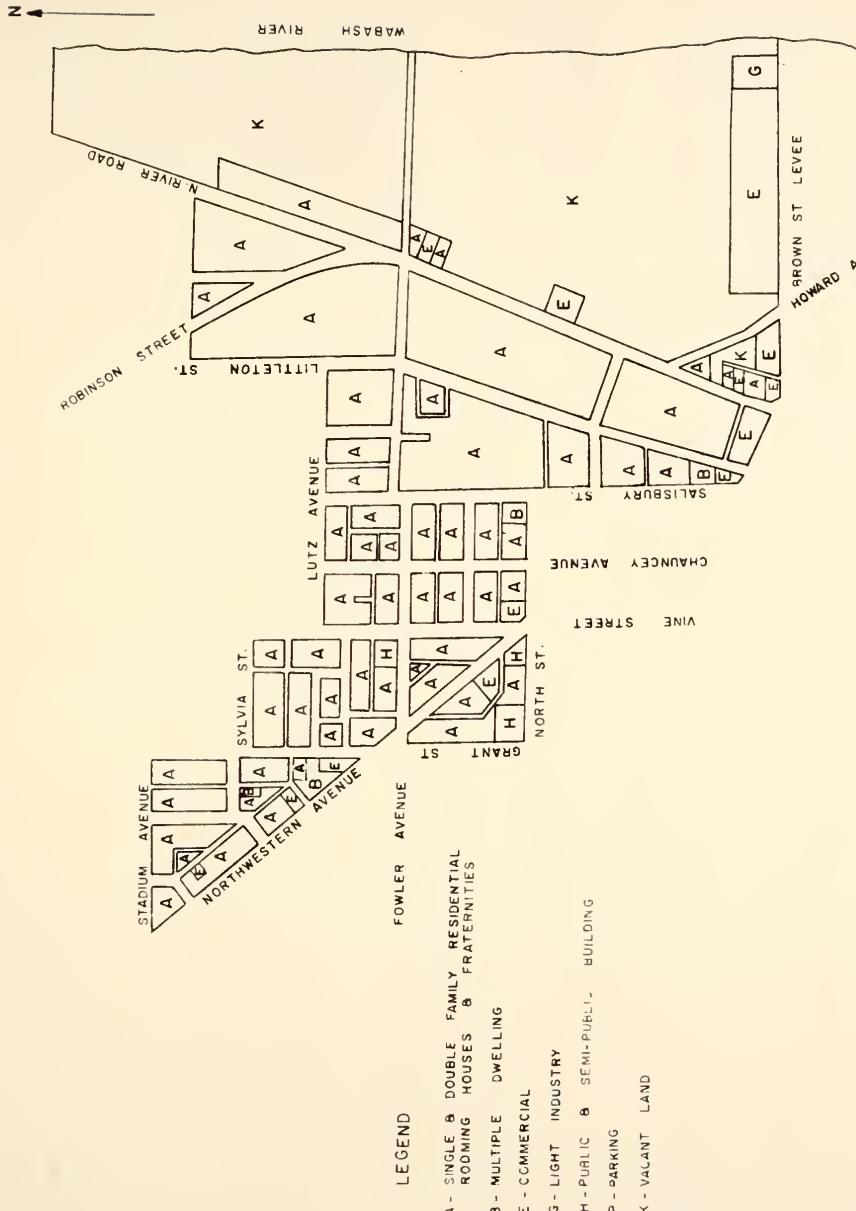
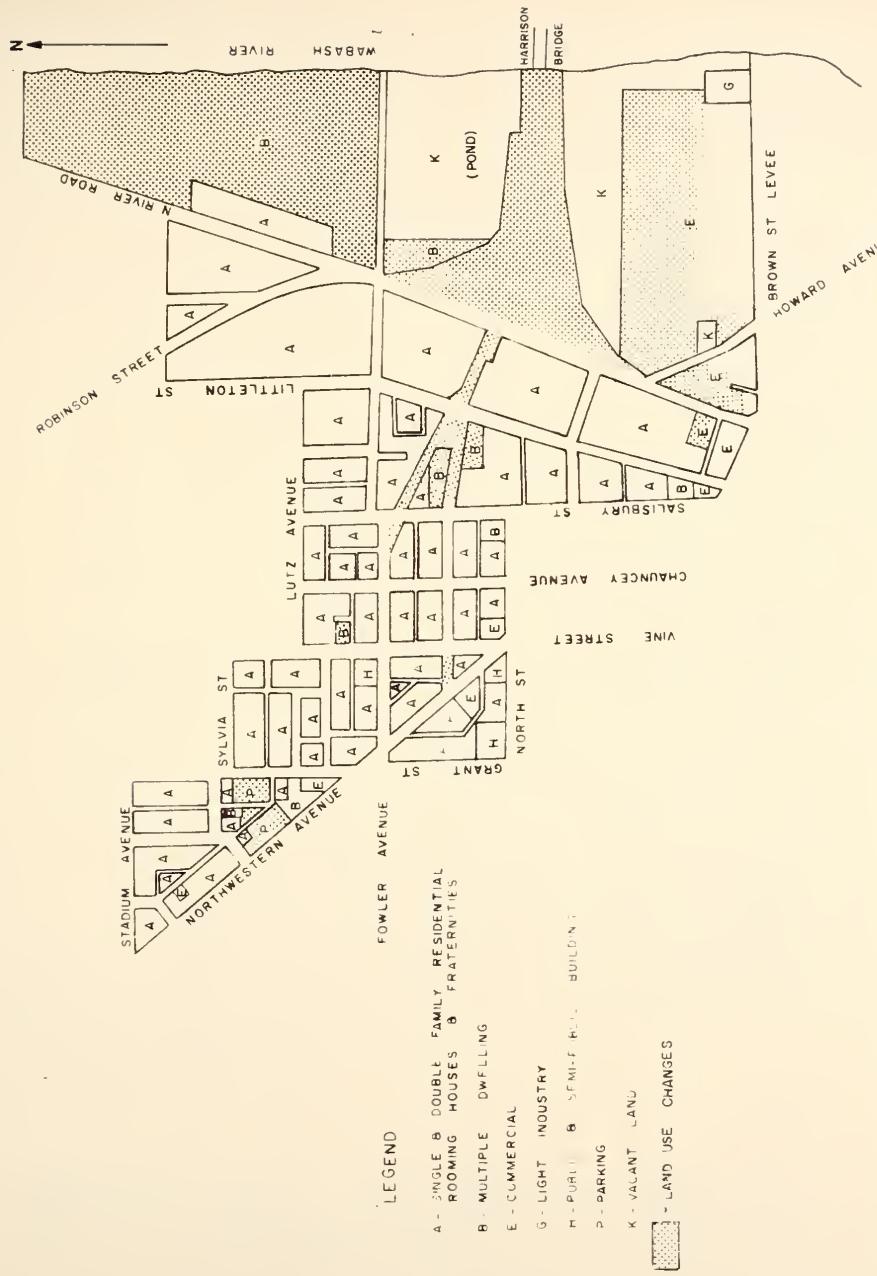


FIGURE 30 DETAILED LAND USE STUDY AREA-WEST LAFAYETTE 1959

FIGURE 31 LAND USE CHANGES IN STUDY AREA, 1959 TO 1967, WEST LAFAYETTE



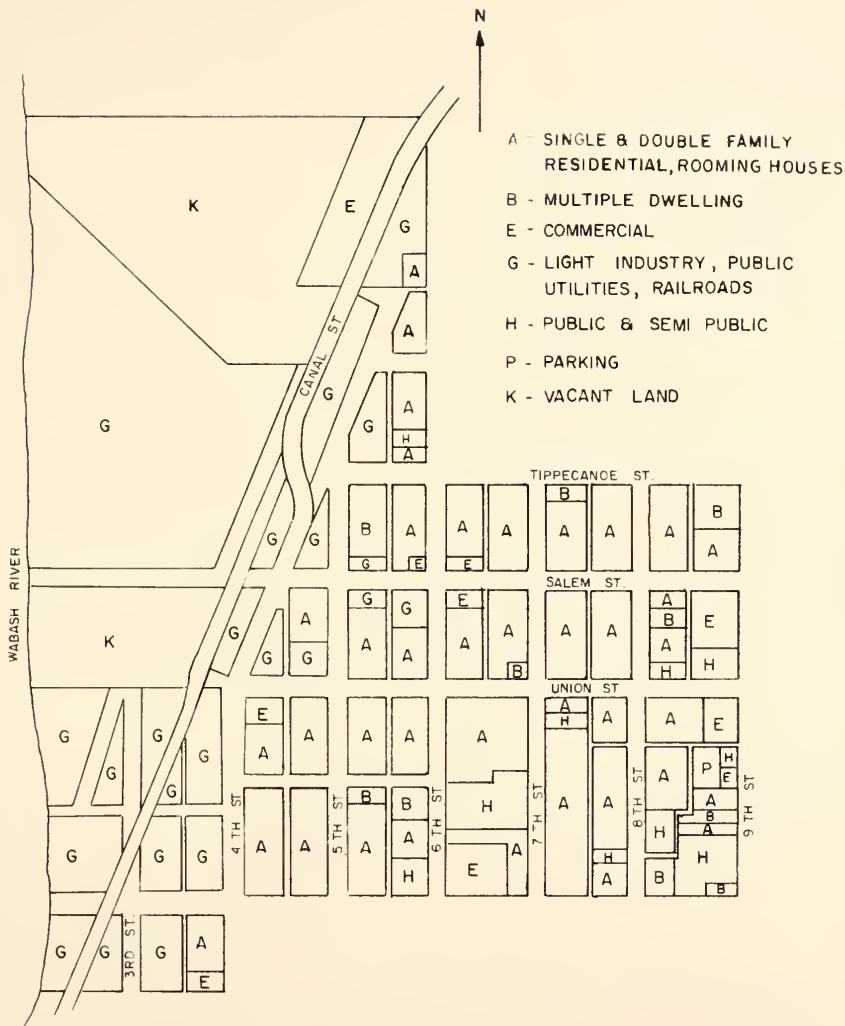


FIGURE 32 DETAILED LAND USE STUDY AREA -
LAFAYETTE 1959

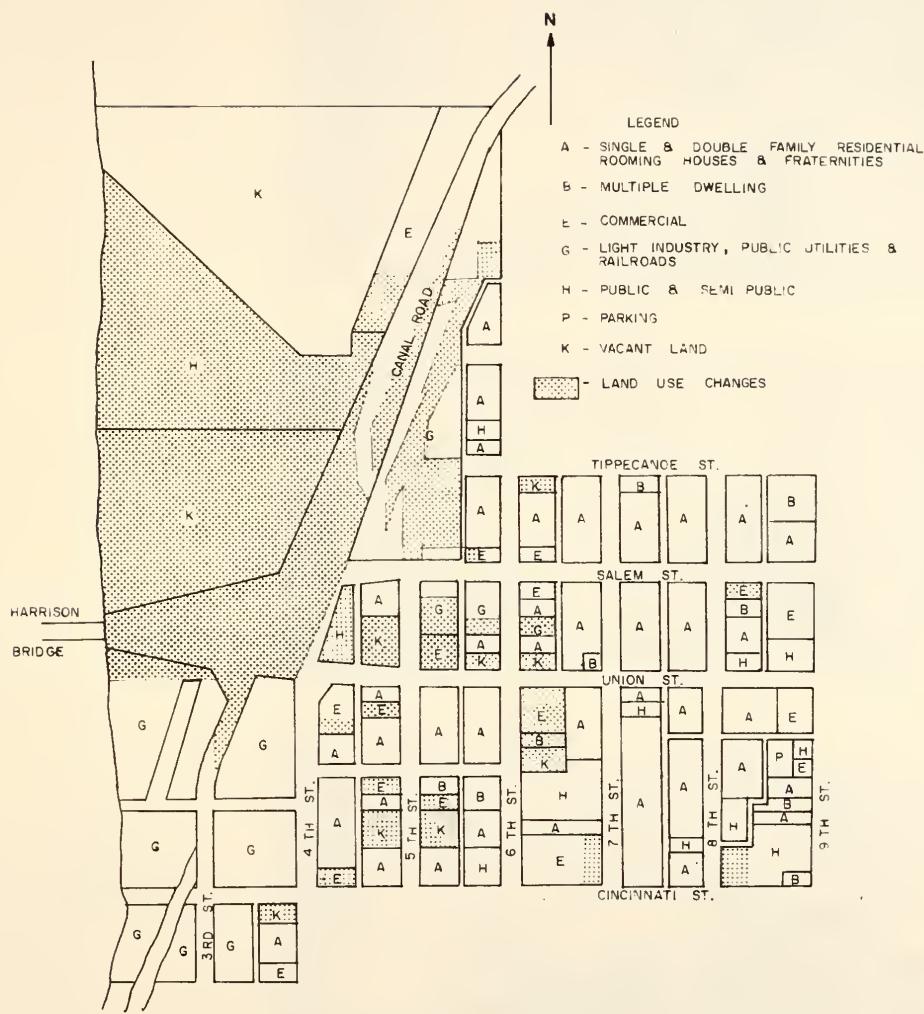


FIGURE 33 LAND USE CHANGES IN STUDY AREA, 1959
TO 1967, LAFAYETTE

BEFORE
JULY 1957



AFTER
APRIL 1962



AFTER
SEPT. 1967



FIGURE 34 AERIAL VIEWS OF THE HARRISON BRIDGE
LOOKING NORTH

north and show the new development around the West Lafayette side of the Bridge. Figure 35 shows the Bridge area facing east. Major developments such as the new apartments north of the Bridge and the new commercial structures south of the Bridge are easy to pick out.

A detailed analysis was done on parcels of land which experienced land use changes. The study included an analysis of land value. The sale value was determined from information obtained from the deed record books in the Tippecanoe County Recorder's office. Sale price was inferred from the Federal Revenue Tax Stamps recorded on the deed. Previous research (7) indicated that inferred values from these stamps gave a reliable estimate of sale prices.

The analysis showed that significant changes in land use occurred on the land north of the Harrison Bridge between North River Road and the Wabash River, the shaded area in Figure 36. Prior to the taking of right of way for the Bridge, a series of single family residences was located on the east side of North River Road. A total of 5 houses was demolished when the needed right of way was taken for the widening of North River Road. The land 150 feet east of the old right of way line and extending to the Wabash River was low bottom land that took occasional overflows from the river. It was therefore vacant.



AFTER - APRIL 1962



AFTER - SEPT. 1967

FIGURE 35 AERIAL VIEWS OF THE HARRISON BRIDGE
LOOKING EAST

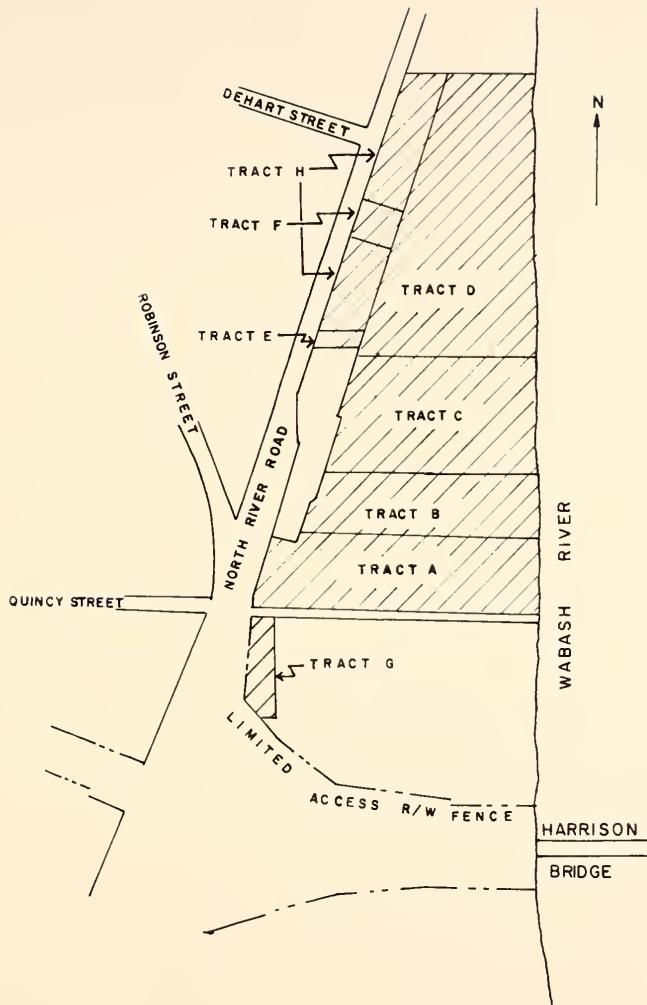


FIGURE 36 LAND ACQUIRED FOR WILLIAMSBURG ON THE
WABASH APARTMENT PROJECT

Starting in 1963, a series of purchases was made to accumulate the parcel of land shown in Figure 36. The land was acquired over a two year period. The date of transfer and the inferred value of the sale for each tract are as follows:

<u>Tract</u>	<u>Date of Transfer</u>	<u>Inferred Value</u>
A	May 8, 1963	\$56,250
B	September 20, 1963	19,750
C	May 8, 1964	Quitclaim Deed
D	October 8, 1964	8,250
E	October 15, 1964	6,250
F	December 28, 1964	3,750
G	January 15, 1965	3,750
H	March 23, 1965	16,250

The land involved in these transactions had an inferred value much greater than if the land had remained low bottom land. Furthermore, tracts "B," "C," and "D" had no access to North River Road and thus had little value to a single owner. When combined with property having frontage on a city street, however, and when used for apartment development the land experienced a substantial increase in value.

After acquiring the first tract of land, construction was started on the first phase of the Williamsburg on the Wabash Apartment Project. Construction of new units continued gradually until the entire project of 476 units in 17 buildings was completed in late 1967. A photograph of

the project is shown in Figure 37. The cost of the construction of the apartment buildings was approximately \$3,000,000. Before construction was begun the level of the land was raised to prevent overflows from the Wabash River. Fill was taken from areas of the parcel that were especially set aside for that purpose. Tract "G" is used as an auxiliary area to the apartment project. It contains storage space, 16 garages, 20 carports, and a beauty shop. The assessed value of the land and improvements is, of course, much higher now than before construction of the apartment project and before the Bridge. Assessed evaluation for 1959 was approximately \$15,000 while for 1967 it was \$830,000. Some of the buildings in the project have not yet been assessed as they were completed after March 1, 1967. The city will benefit directly from this project in the form of higher property taxes being paid.

Many factors were probably involved in the location of this apartment project at this site. The construction of the Harrison Bridge resulted in the addition of two advantageous factors. One was due to the demolition of several houses fronting on North River Road when the street was widened. This land was therefore without improvements and the possibility of selling the property was high. If these houses had remained, difficulty in buying frontage on North River Road may have occurred. Another advantage that the property received from the construction of the



FIGURE 37 THE WILLIAMSBURG ON THE WABASH
APARTMENT PROJECT

Bridge was improved access. The Bridge enabled traffic to and from the apartment project to bypass congested parts of both West Lafayette and Lafayette. The widened approaches including North River Road also provided needed extra capacity and safety for the large number of turning movements into and out of the apartment project.

Another significant change in land use occurred in the study area in 1962. A large parcel of land as outlined in Tract "A" on Figure 38 was sold for an inferred amount of \$188,750 on August 31, 1962. The original owner had title to this land before the Harrison Bridge was built. The land contained 10.24 acres and was vacant at that time. The land had been filled to road level height and in keeping with the grade of commerical properties facing Brown Street. The fill was good gravel and soil which was taken from other lands owned by the same individual to the north.

After the sale, a large one story commercial building and parking lot was constructed. The construction cost was approximately \$535,000. Two stores occupied the building. One was a Standard Market which is one of a chain of supermarkets. The other was a Shopper's Fair which is also in a chain of discount department stores. Access to the parking lot is from Brown Street. A photograph of the improvement is shown in Figure 39.

In the same area, four parcels of land have been newly developed and one parcel is awaiting development.

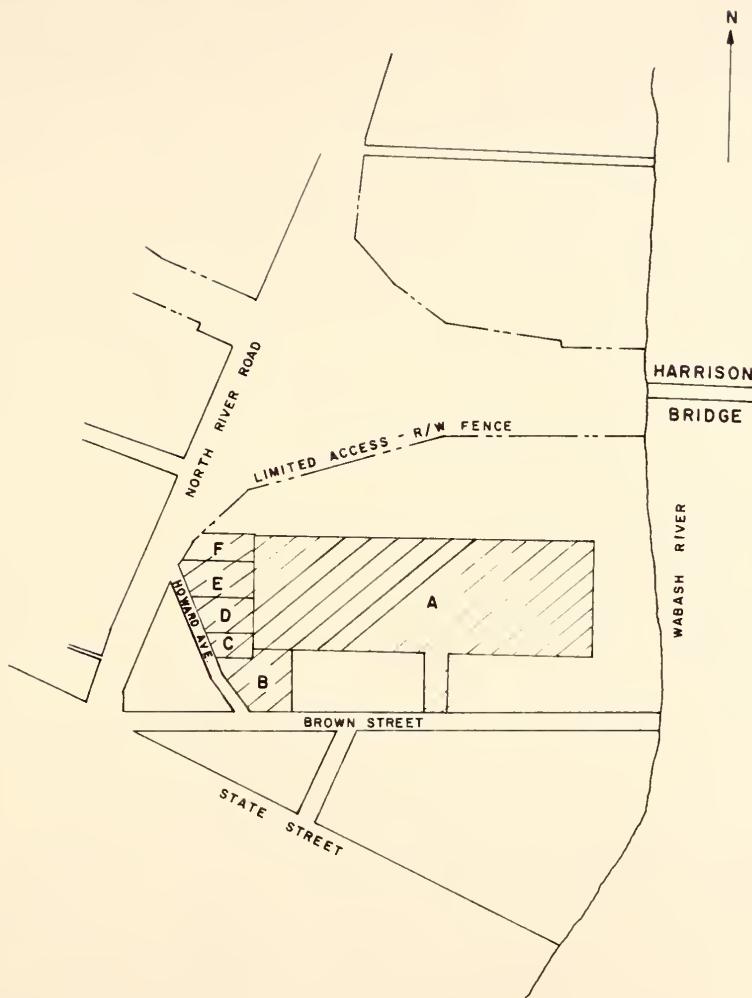


FIGURE 38 LAND USED FOR DEVELOPMENT SOUTH OF HARRISON BRIDGE

The parcels are located on the east side of Howard Avenue (see Figure 58). Starting from the intersection of Howard Avenue and Brown Street and going north the developments include the Pig and Whistle, a tavern selling sandwiches and beer, Tract "B" (see Figure 40); an empty parcel of land awaiting development, Tract "C" (see Figure 41); the Pizza Hut, a restaurant, Tract "D" (see Figure 42); the Bonanza Steak House, a cafeteria, Tract "E" (see Figure 43); and a Kentucky Fried Chicken carry-out food store, Tract "F" (see Figure 44).

Changes to commercial land use, as outlined above, have occurred in a large portion of the area bounded by the Harrison Bridge, Wabash River, Brown Street Levee, Howard Avenue, and North River Road. Portions of this land were developed commercially before the Harrison Bridge was built but this was mainly along Brown Street. The opening of the Bridge has probably accelerated new development north from Brown Street because of the improved accessibility provided by the Bridge and widened approach streets.

A change in land use also occurred in a parcel of land on the west side of North River Road (see Figure 51). In connection with the widening of North River Road 2,990 square feet were taken from the front of this parcel. No improvements were located on that part of the parcel. On January 22, 1965, approximately 17,780 square feet of the



FIGURE 39 STANDARD MARKET & SHOPPER'S FAIR



FIGURE 40 PIG AND WHISTLE TAVERN



FIGURE 41 EMPTY PARCEL AWAITING DEVELOPMENT



FIGURE 42 PIZZA HUT RESTAURANT



FIGURE 43 BONANZA STEAK HOUSE



FIGURE 44 KENTUCKY FRIED CHICKEN STORE



parcel were sold. That part of the parcel also contained no improvements. Soon after the sale an Ice Cream Parlor with parking area was constructed on this new parcel of land. In the summer of 1966, the building was remodeled and turned into a Steak House as can be seen in Figure 45. Assessed value of the improvement is \$15,160. This new development is partly due to an improved North River Road which was widened when the Harrison Bridge was constructed.

Changes in land use also occurred in the area near the Harrison Bridge in the city of Lafayette. A parcel of land at the northeast corner of 5th Street and Union Street has undergone a land use change. This parcel consisted of four different tracts of land as outlined in the shaded area of Figure 46. The land contained single and double family residential buildings. In 1964, these tracts were purchased from separate owners and combined to form the parcel. The purchases were as follows:

Tract A	9-4-64	\$15,250
Tract B	10-6-64	11,250
Tract C	8-6-64	6,250
Tract D	12-8-64	4,250

In early 1965, construction was started on a one story building 70 by 108 feet in size which now houses Hook's Pharmacy. The building is shown in Figure 47. Before the site was cleared of the old buildings the assessed value of these improvements was \$6,350 and the land was assessed



FIGURE 10. SMOKY STEER STEAK HOUSE

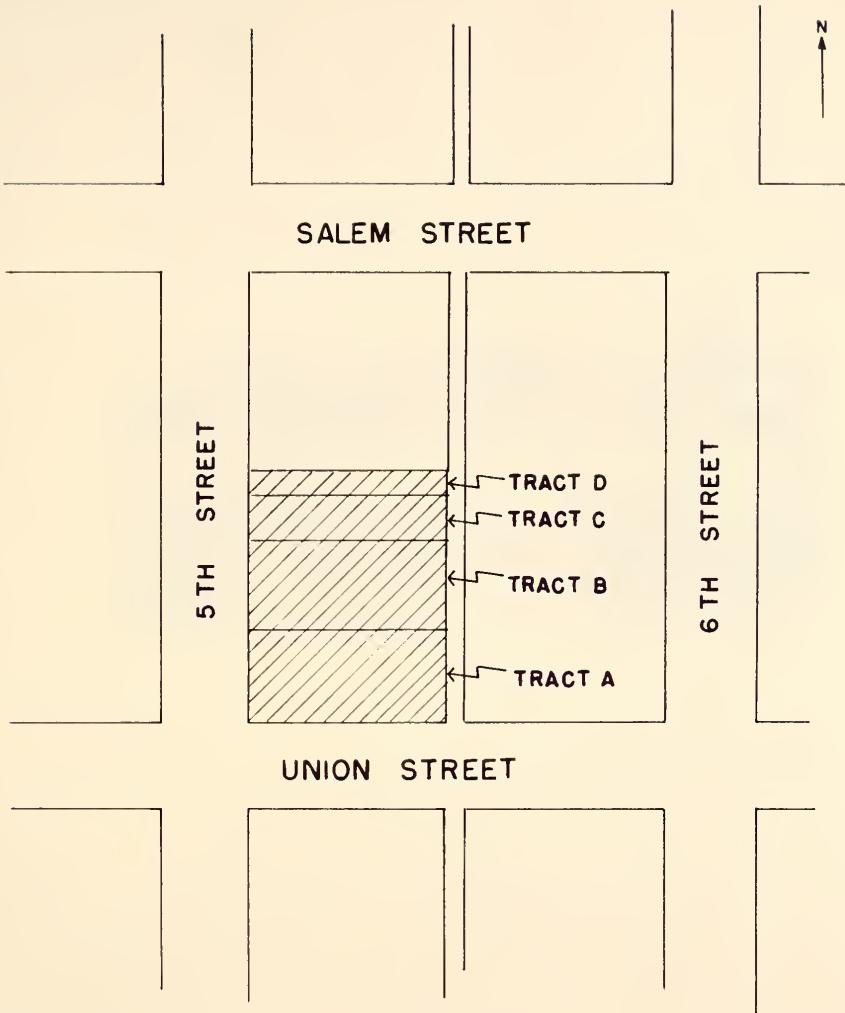


FIGURE 46 LAND ACQUIRED FOR COMMERCIAL BUILDING ON UNION STREET



FIGURE 47 HOOK'S PHARMACY

at \$710. Now the improvements are assessed at \$18,620 and the land at \$5,200. A large increase in property taxes thus resulted.

One of the probable major reasons involved in the selection of this site for the pharmacy was the Harrison Bridge. Good access from the Bridge and adequate off-street parking enabled the site to take advantage of the large market of West Lafayette while also serving Lafayette.

On 3rd Street just south of the Harrison Bridge, a new building was erected by Public Service of Indiana, a utility. Figure 48 shows a map of its location and a photograph of the improvement. The land near this site contains a group of buildings owned by Public Service of Indiana. On this parcel an old building owned by them and assessed at \$11,305 was torn down in 1964. A new building was erected and assessed at \$39,990. The new building takes advantage of the Harrison Bridge and the new streets in its vicinity. A drive-in office in the building enables cars driving south on 3rd Street to pay their electric bills without leaving their automobiles. The Bridge and approach streets afford quick access from a large area of Greater Lafayette.

Another change in land use occurred on Salem Street between 5th and 6th Streets. A single family residential structure was on this property until 1965. At that time the original building was torn down and a structure

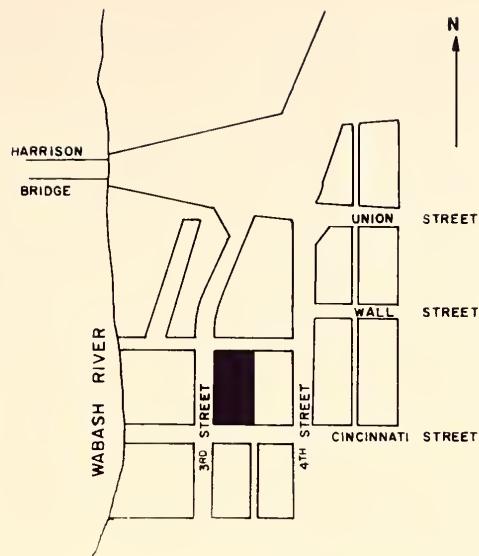


FIGURE 48 LOCATION AND PHOTOGRAPH OF PUBLIC SERVICE OF INDIANA BUILDING

containing the Salem Automachine business was constructed. A map showing the parcel and a photograph of the building is in Figure 49. An increase in assessed value occurred along with the improvement. The assessed value of the old improvement was \$580 while the new improvement was assessed at \$2,370.

Before the Harrison Bridge was constructed, a Coca-Cola Bottling Company plant was situated at the corner of Salem Street and 6th Street. Recently this plant has expanded. The shaded area in Figure 50 is the land which is now used by this plant. Tract "A" in the figure is the parcel that contains the bottling plant. The other tracts in the figure were acquired more recently and contain parking space and loading and unloading areas. Tracts "B" through "H" contained one and two family residences before they were bought by Coca-Cola. The improvements were torn down after they were purchased. Although no improvements have been added on the acquired land to date, it is probable that the company plans to use some of the areas for expansion in the future. Data on purchase date and inferred costs are as follows:

Tract B	3-15-65	\$2,250
Tract C	3-4-65	9,750
Tract D	11-17-59	7,750
Tract E	6-1-62	5,250
Tract F	12-8-64	4,250

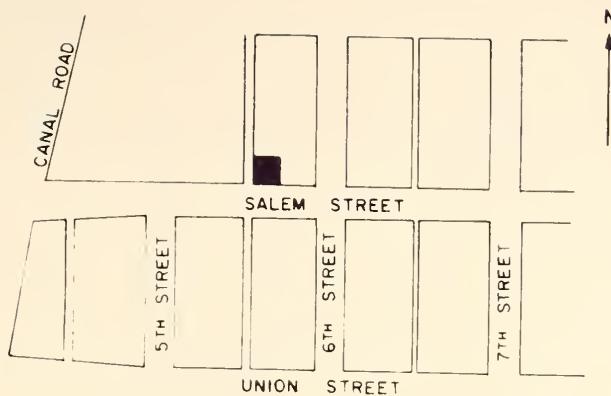


FIGURE 49 LOCATION AND PHOTOGRAPH OF SALEM AUTOMACHINE COMPANY BUILDING

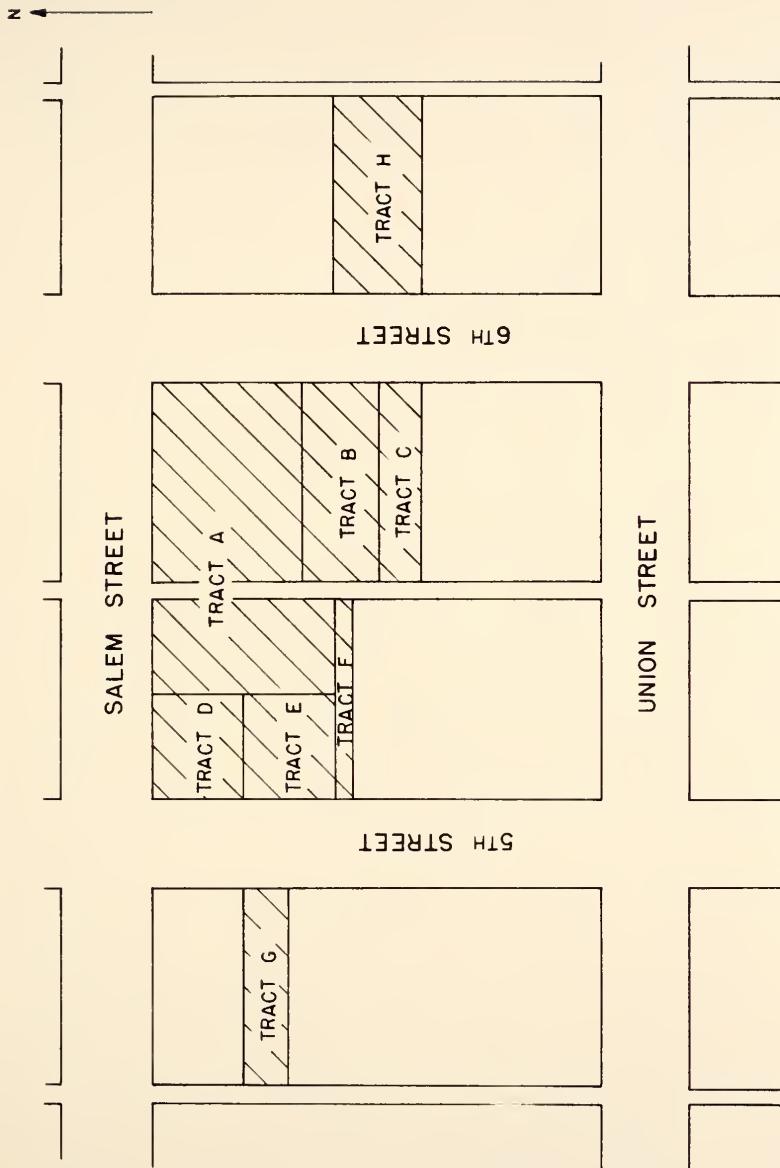


FIGURE 50 LAND ACQUIRED FOR COCA COLA BOTTLING PLANT

Tract G	9-16-66	\$6,250
Tract H	4- 1-66	7,750

The plant is only two blocks from the Harrison Bridge. The construction of the Bridge and approaches greatly improved the location of this plant. Since the plant must deliver its product throughout the Greater Lafayette area, travel times on its deliveries are now lower.

The southeast corner of the intersection of 4th Street and Union Street was greatly enhanced as a commerical area when the Harrison Bridge was opened. This area was the site of the Union Liquor Store and the Pub Tavern. The Bridge afforded these businesses enhanced visibility and accessibility. Residents of West Lafayette, where retail liquor stores and taverns selling liquor are not permitted, could easily reach these stores. Instead of only serving the people in the immediate vicinity of these businesses, the whole city of West Lafayette could now be easily served.

The right of way needed in connection with the widening of Union Street and 4th Street at their intersection resulted in the State purchasing some of the property of these businesses. Thus a rearrangement of parking space took place from the front to the back of these businesses and new store fronts were built where necessary. Increased business occasioned by the Bridge definitely increased the value of these businesses. New off-street parking areas

were added recently and an addition to the Pub Tavern was made in 1964.

Photographs of the Union Liquor Store and the Pub Tavern before the Bridge construction are shown in Figure 51. Figure 52 is a photograph of the present arrangement. A cleaning establishment also took advantage of this location. It erected a building with off-street parking area in 1965. A photograph is shown in Figure 52.

The land use changes which have been discussed to this point plus some additional land use changes discussed in the following section on remainder parcels have been of changes within the originally designated study area (see Figures 31 and 33). The impact of the Harrison Bridge, however, on land use has extended beyond this area. For example, at the intersection of Union Street and 9th Street, two businesses with off-street parking areas are located. One is a Chicken Delight carry out and delivery food service store. A large amount of the business of this store entails the delivery of its product. A probable factor in the location of this store was the need for good access to the large market of West Lafayette. The Harrison Bridge provides this access. A photograph of this business is shown in Figure 53.

The other business with off-street parking at this intersection is the Dillon's Hardware Store (see Figure 53). This one location serves the Greater Lafayette area. A



UNION LIQUOR STORE - 1958



PUB TAVERN - 1958

FIGURE 51 IMPROVEMENTS AT UNION AND 4TH STREETS
BEFORE BRIDGE CONSTRUCTION



UNION LIQUOR STORE AND PUB TAVERN - 1967



CLEANER'S - 1967

FIGURE 52 IMPROVEMENTS AT UNION AND 4TH STREETS
AFTER BRIDGE CONSTRUCTION



CHICKEN DELIGHT STORE



DILLON'S HARDWARE STORE

FIGURE 53 IMPROVEMENTS AT UNION AND 9TH STREETS
IN 1967

Dillon's Hardware Store was located in West Lafayette prior to the construction of the Bridge. This store was destroyed in a fire in 1964. One of the probable reasons why this store was not rebuilt was because it was felt that the Union Street store could serve the West Lafayette area adequately. This was due to the access to the Lafayette store provided by the Harrison Bridge.

The Harrison Bridge has also undoubtedly had an effect on land use development and value in more distant parts of both cities. Access of West Lafayette residents to the Market Square Shopping Center was materially improved and probably has resulted in accelerated development of that Center. Similar effects on other commercial property along or near Union Street are probable.

A summary was made on the effect of the Harrison Bridge on assessed evaluation of property. Parcels that underwent land use changes in the study area since construction of the Bridge were tabulated (see Table 3). The assessed value of property taken for right of way for the Bridge was estimated by taking one third of the total state appraisal of the land and improvements taken. The parcels listed in Table 3 may be located by referring to Figures 54 and 55. Since assessed values noted were as of March 1 for 1967, some current values are incomplete because of development completed or in progress since that date. These values are starred twice in the table.

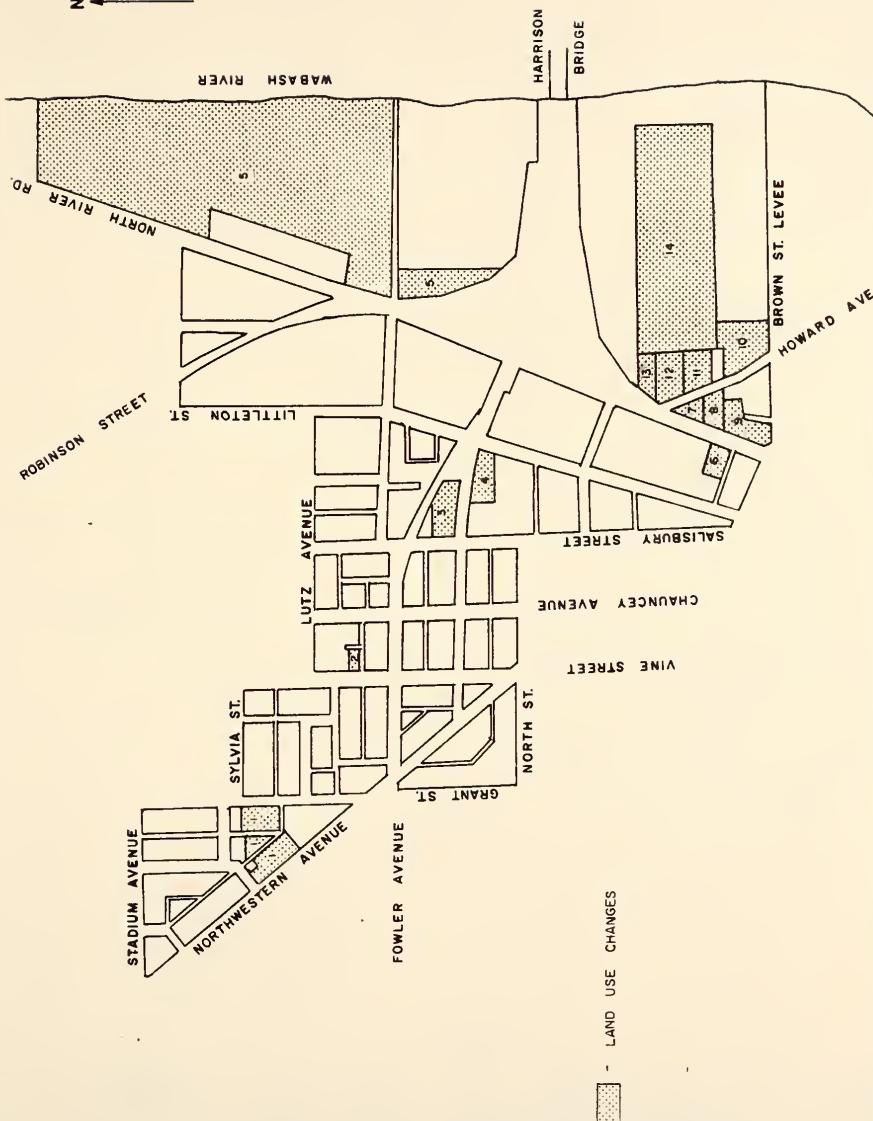
Table 3. Assessed Value of Property Involved in Land Use Changes in Study Area.

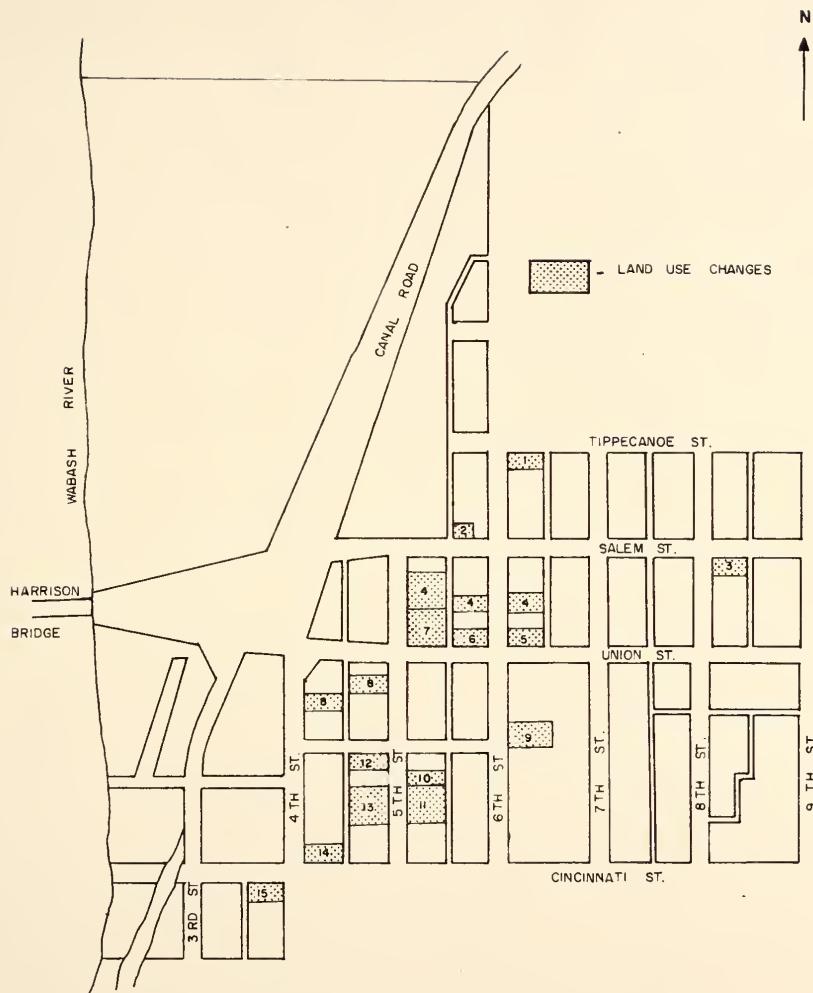
Parcel	1959	1967
Right of Way Taken	\$ 542,123*	0
West Lafayette Parcel 1	35,295	\$11,295**
2	1,725	12,410
3	3,000	36,070
4	2,060	20,410
5	8,000	830,000**
6	2,000	15,160
7	1,000	7,530
8	200	5,230
9	2,000	13,950
10	1,570	2,520**
11	500	600**
12	500	600**
13	75	1,000
14	3,425	163,120
Lafayette Parcel		
1	2,600	600
2	1,150	2,880
3	3,400	3,400
4	11,870	2,720
5	5,890	3,900**
6	4,485	5,440**
7	7,060	23,640
8	5,560	1,410
9	7,245	840
10	1,110	5,200
11	6,720	2,490
12	500	6,340
13	2,375	530
14	2,300	2,260
15	4,665	5,630**
Total	\$ 670,403	\$1,183,175**

* Estimated by taking one third of the total state appraisal of the land and improvements taken.

** Incomplete because of development in 1967 after assessment date of March 1.

FIGURE 54 LOCATION OF LAND USE CHANGES IN STUDY AREA, 1960 TO 1967, WEST LAFAYETTE





The total assessed value of property that underwent land use change between 1959 and 1967 shows an increase of \$512,772. Thus even though assessed values and therefore tax revenues showed a decrease immediately after the right of way for the Bridge was assembled, seven years after construction of the Bridge assessed values had increased more than the original decline and considerable additional increase is still occurring. The Bridge undoubtedly had a beneficial effect on assessed values in the study area.

REMAINDER PARCEL STUDY

The acquisition of right of way for highway improvements is a complicated process especially in urban areas. Many factors are involved in determining the price the State should pay property owners for land taken in connection with new highway construction. The intent of this study of remainder parcels was to determine the effect on land use and land value of properties partially taken for right of way for the Harrison Bridge. Data on seven properties were available for case studies (see Appendix).

From the results of the case studies, it can be seen that significant increases in land value occur when a land use change takes place. Case Study Numbers 2, 3, 6, and 7 are examples of this enhancement of land value. The main land use change was from single family residential buildings to multiple dwellings or commercial buildings.

The case studies also show that land that contained single family residential structures both before and after the construction of the Harrison Bridge have experienced no increase in value. Case Study Numbers 4 and 5 show no gain in the value of land used for single family residential buildings near the Bridge both before and after the Bridge.

RESULTS

A summary of the major results of this study is as follows:

1. The original savings in travel time that occurred when the Harrison Bridge was completed in 1960 for the street system near the Bridge remained in 1967 even though traffic volumes increased typically 60 percent. Thus, the design of the Bridge and approaches has proved to be adequate for the traffic growth in the seven year period following the opening of the Bridge.
2. The opening of the Bridge reduced traffic volumes in the Lafayette CBD in the first year after opening to about 67 percent of what they were before opening. Except on Third and Fourth Streets where volumes have increased during the last six years about 25 percent, little change in traffic volumes has occurred on other streets in the CBD of Lafayette.
3. The percentage of total vehicles crossing the Wabash River on the three central bridges that used the Harrison Bridge has increased during the first seven years of operation of that Bridge while the percentage that used the Main Street Bridge has decreased.

4. Streets that became arterials carrying traffic onto and off the Bridge had a substantial increase in accidents immediately following opening of the Bridge and that increase has remained for the first seven years.
5. Accidents at the reconstructed intersections of 3rd and 4th Streets with Union and Salem Streets were reduced immediately after traffic signals which were in the original design of these intersections were installed late in 1961.
6. The percentage increase in the accident rate for all arterials in the central area of Greater Lafayette for the period 1957 - 1959 to the period 1961 - 1963 was much less than the increase from 1961 - 1963 to 1964 - 1966 even though travel increased rather steadily. The smaller increase in the accident rate between 1957 - 1959 and 1961 - 1963 was probably due to the only significant change in the central area arterial system, the Harrison Bridge and its approaches.
7. During the period immediately after opening of the Bridge, a large number of right angle accidents occurred at the intersection of Vine and Wiggins Streets in West Lafayette. The installation of a traffic signal at this location greatly reduced the total number of accidents at this location,

from 58 in a 38 month period before the signal to 6 in a 34 month period after its installation.

8. An appreciable number of rear end collisions have occurred at the Yield sign at the Harrison Bridge Exit Ramp in West Lafayette, at the Harrison Bridge Entrance Ramp in West Lafayette, at the turning roadway from Fourth Street to Union Street, and at the turning roadway from Union Street to Third Street. Right angle collisions have occurred in substantial numbers at the four reconstructed intersections at the east end of the Harrison Bridge even though traffic signals exist. A detailed analysis of these accidents may indicate operational changes at these locations which would reduce these accidents.
9. The major land use changes that had occurred between 1959 and 1962 resulted from the destruction of existing development in connection with the construction of the Bridge.
10. Major changes in land use west of the River in the West Lafayette land use study area have occurred since completion of the Harrison Bridge. North of the Bridge, a large number of multiple dwellings have been constructed. South of the Bridge, extensive commercial development has occurred and continues to develop.

11. Major changes in the Lafayette land use study area east of the River have been the demolition of numerous substandard dwelling units and the erection of several commerical structures. This development trend is also a continuing one.
12. Even though assessed values and therefore property tax revenues of the land use study area showed a considerable decrease (about one-half million dollars) immediately after the right of way for the Bridge was assembled, seven years after completion of the Bridge assessed values had increased twice (over one million dollars) as much as the original decline and continuing development indicated substantial increases would continue to occur for some time.
13. Substantial increases in land value occurred in the area near the Bridge when a land use change took place. On the other hand, land, in the area of the Bridge that was single family residential use both before and after the construction of the Harrison Bridge experienced no increase in value in the two cases where sale price data for both periods were available.

RECOMMENDATIONS

The following recommendations are made:

1. Although the savings in travel time for trips using the new Bridge and its approaches continue to exist after seven years, the increasing volumes of traffic using the Bridge and its approaches requires that the planned improvement of extending Salem Street to beyond 21st Street and linking it to an improved Union Street be completed as early as possible so that those savings can be continued for the future.
2. A detailed accident study should be made of the four intersections at the east end of the Bridge and of all ramps to and from the Bridge. There are clear indications that such a study would produce recommendations for operational changes which would reduce the number of accidents at these locations.
3. The long term study of the impact of the William Henry Harrison Bridge should be continued to evaluate continued impact of the highway improvement on traffic, land use, land value, and the community.

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APPENDIX 1. CASE STUDY NO. 1

APPENDIX 1. CASE STUDY NO. 1

Location

The subject parcel was a lot, with residence, having frontage on Littleton Street in West Lafayette, Indiana. The location of the lot and the street system existing until 1959 is shown in Figure 1-1; the existing street system is shown in Figure 1-2.

"Before" Data

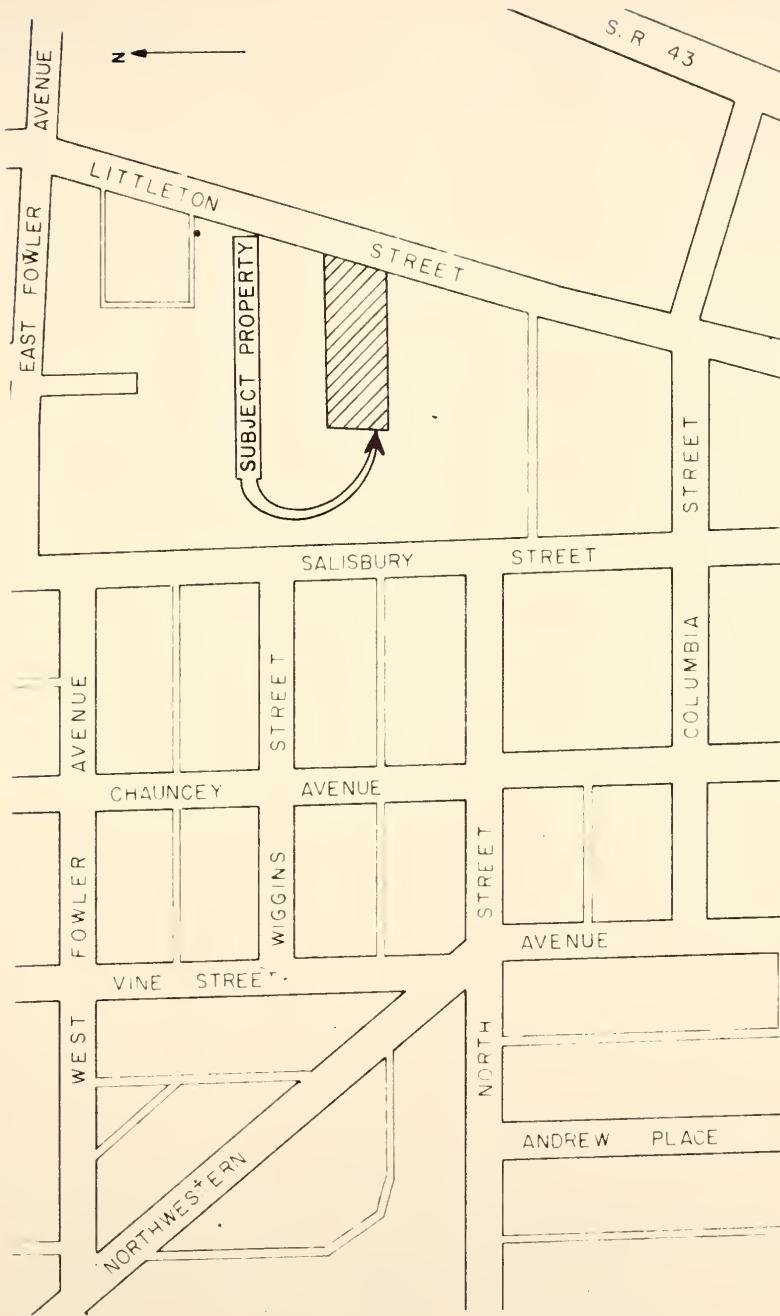
The property was purchased in September 1949 for an inferred price of no more than \$26,500. At the time of taking the residence was being used as income property.

Description of Highway Improvement

In 1959 to 1961 the William Henry Harrison Memorial Bridge together with its approaches and connecting ramps was constructed as a major highway link between the cities of Lafayette and West Lafayette and as the new location for U.S. 231. The west approach is a four-lane divided highway. Access is limited to the intersecting streets and connecting ramps in the vicinity of the subject property; a control of access fence was constructed along the right of way line between these intersecting streets.

THE STREET PATTERN EXISTING IN 1958 FOR A PORTION OF WEST LAFAYETTE

FIGURE I-1





STREET PATTERN EXISTING IN 1961 FOR A PORTION OF WEST LAFAYETTE

FIGURE 1-2

Part Taken

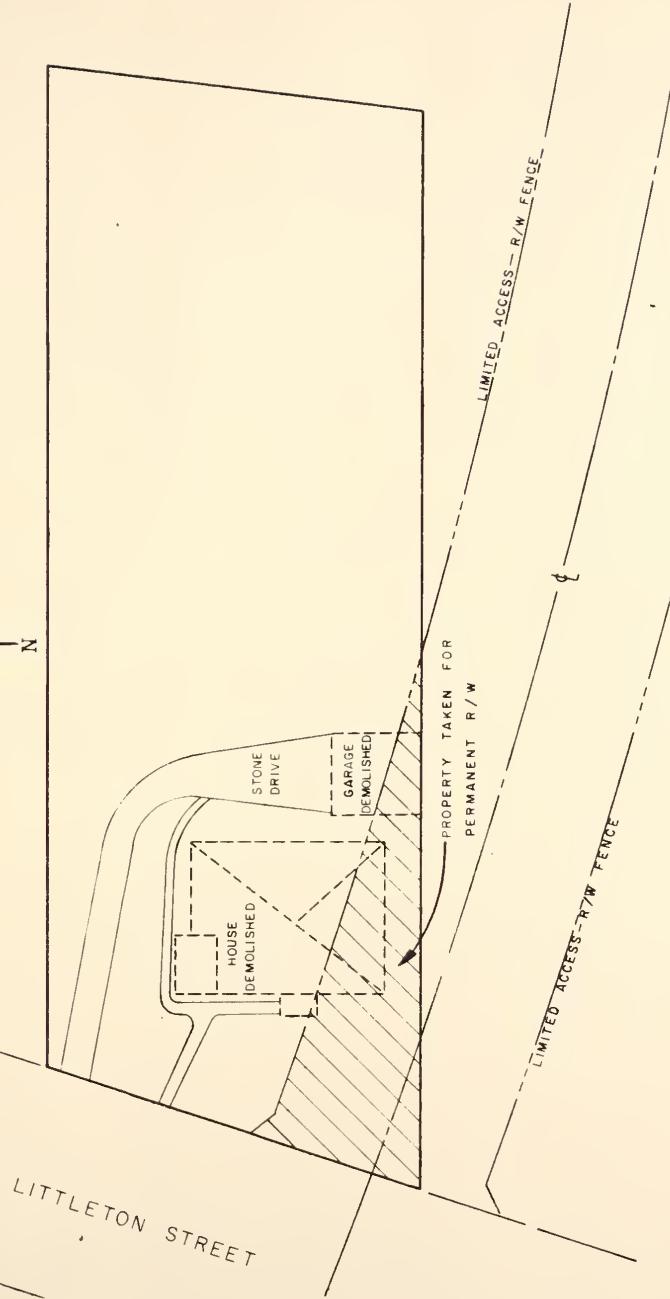
As a result of this highway improvement the entire property was appraised in July 1958. A summary of the two state appraisals is as follows:

	<u>Appraisal A</u>	<u>Appraisal B</u>
Land:		
26,250 sq.ft., 106 front ft.	\$ 8,730.00	\$ 8,630.00
Improvements:		
2 story brick house	\$ 38,942.00	\$ 38,942.00
garage and additions	<u>2,797.00</u>	<u>2,797.00</u>
less depreciation	\$ 41,739.00 21,704.00	\$ 41,739.00 20,869.00
Total Appraisal Value	\$ 28,750.00	\$ 29,500.00

The portion of the lot (approximately 3,100 sq. ft.) acquired by the State Highway Commission for permanent right of way is shown in Figure 1-3. Appraisal A valued the taking at \$25,795 (residual, \$4,955) while Appraisal B valued it at \$24,554 (residual, \$4965). However, the final settlement was in the sum of \$25,000 and was determined as follows:

Land: in permanent R/W, 3114 sq. ft.	\$ 1,203.00
in temporary R/W, 2772 sq. ft.	
Improvements: buildings	21,337.00
trees and shrubs	200.00
damage due to irregular shape	<u>2,160.00</u>
Total	\$ 25,000.00

SCALE: 1" = 40'



SUBJECT PROPERTY SHOWING RIGHT-OF-WAY TAKEN

FIGURE I-3

"After" Data

In June of 1960 the property owner purchased the two triangular pieces of property indicated in Figure 1-4 for a stated price of \$25 for tract A and \$300 for tract B (both of these tracts were the residual portions of the two adjacent lots, the major portions of which were obtained for right of way). The owner subsequently constructed a one story building containing ten apartments and a utility room on the property. The "before" and "after" situations are shown in Figure 1-5.

Summary

Since no suitable "after" land value was available, enhancement of the land cannot be accurately determined. However, since a multi-family apartment house was erected on the property, the land value probably increased.

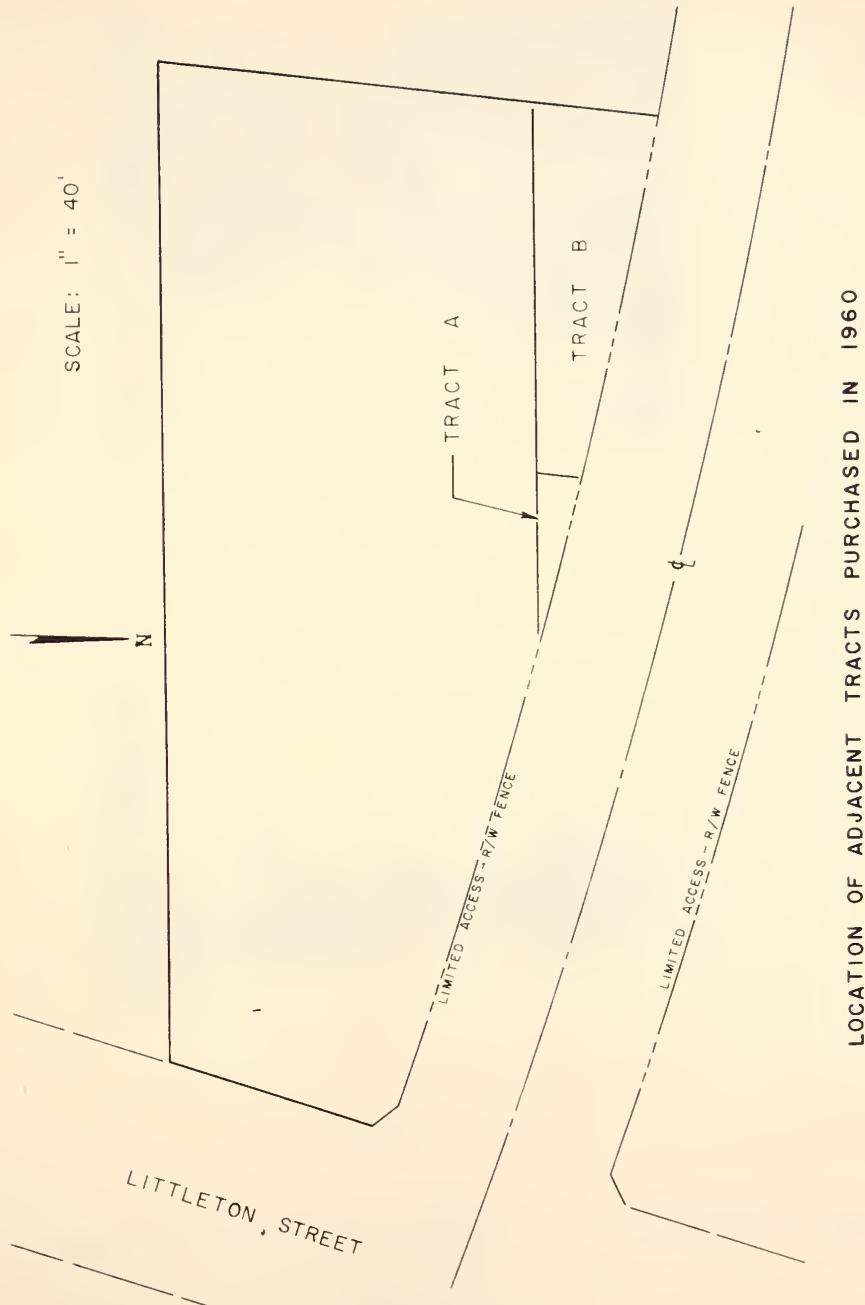


FIGURE I-4



PHOTOGRAPH TAKEN IN JULY 1958

BEFORE



PHOTOGRAPH TAKEN IN NOVEMBER 1961

AFTER

BEFORE AND AFTER PHOTOGRAPHS OF THE SUBJECT PROPERTY

FIGURE 1-5

APPENDIX 2. CASE STUDY NO. 2

APPENDIX 2. CASE STUDY NO. 2

Location

The subject property was located on the east side of Salisbury Street in West Lafayette. The location of the lot and the existing street system is shown in Figure 2-1.

"Before" Data

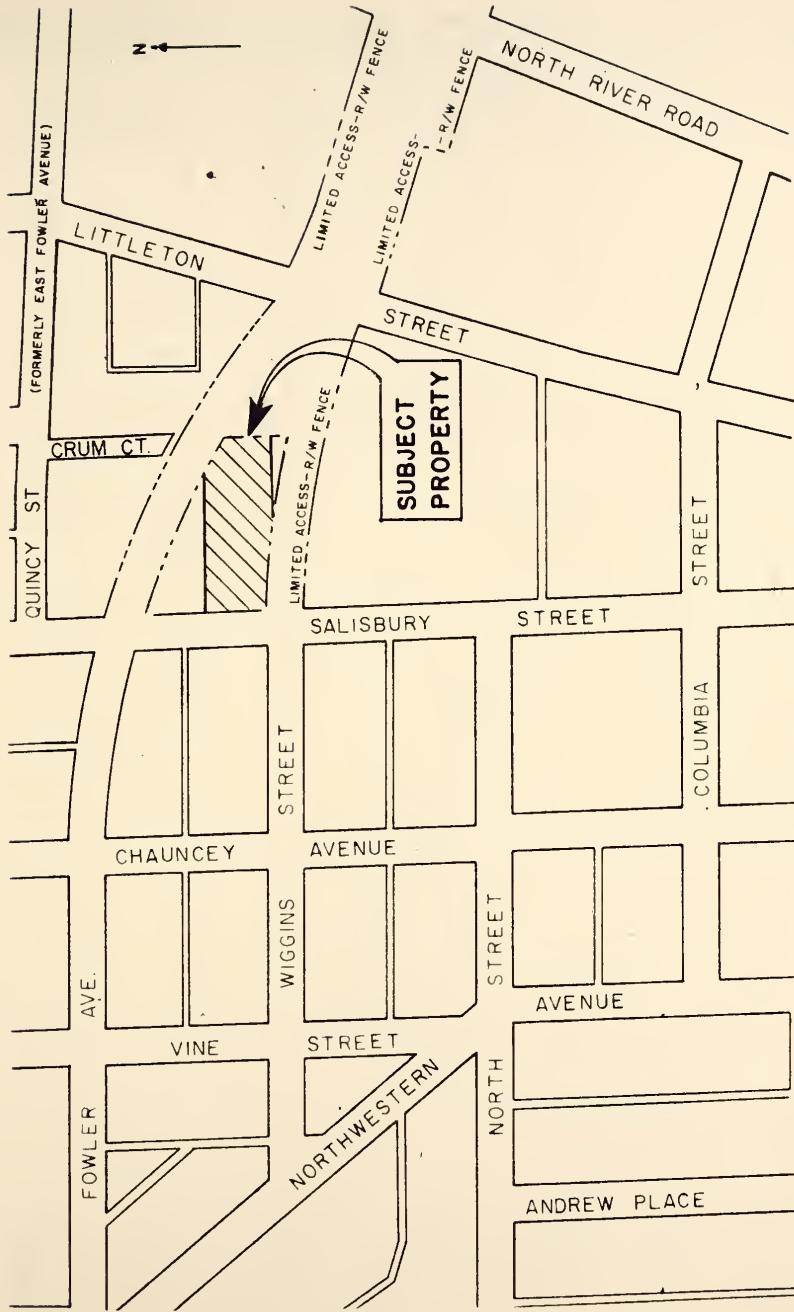
Prior to the highway improvement the parcel contained 30,000 square feet and a one family frame dwelling.

Description of Highway Improvement

In 1959 to 1961, the William Henry Harrison Memorial Bridge together with its approaches and connecting ramps was constructed as a major highway link between the cities of Lafayette and West Lafayette and as the new location for U.S. 231. The west approach is a four lane divided highway. Access is limited to the intersecting streets and connecting ramps in the vicinity of the subject property. A control of access fence was constructed along the right of way line between these intersecting streets.

Part Taken

As a result of this highway improvement the entire property was appraised in August 1958. A summary of the two state appraisals is as follows:



STREET PATTERN EXISTING IN 1961 FOR A PORTION OF WEST LAFAYETTE

FIGURE 2-1

APPENDIX 3. CASE STUDY NO. 3

	<u>Appraisal A</u>	<u>Appraisal B</u>
Land: 30,000 sq. ft.	\$ 7,228	\$ 7,228
Improvements: 1-1/4 story old frame dwelling	<u>3,531</u>	<u>4,120</u>
Total Appraisal Value	\$10,759	\$11,348

The portion of the lot (2,309 sq. ft.) acquired by the State Highway Commission for permanent right of way is shown in Figure 2-2. Appraisal A valued the taking at \$2,104 (residual \$8,665) while Appraisal B valued it at \$2,684 (residual \$8,664). The settlement required a court appraisal of \$3,500 which was the final sum paid.

"After" Data

The property and house were sold in January 1964 for an inferred price of \$21,750. In February 1964 the house was torn down so it can be assumed the purchaser placed no value on the house. The new owner of the property received a land locked parcel of land (tract A indicated in Figure 2-2) by a quit claim deed. Tract B as indicated in the same figure is still owned by the State Highway Commission. In the summer of 1964 the owner constructed five apartment buildings on the property. Each building contains four units which have one bedroom apiece. The cost of construction for the total of twenty apartment units was approximately \$105,000. Photographs of the "before" and "after" situations are shown in Figure 2-3.

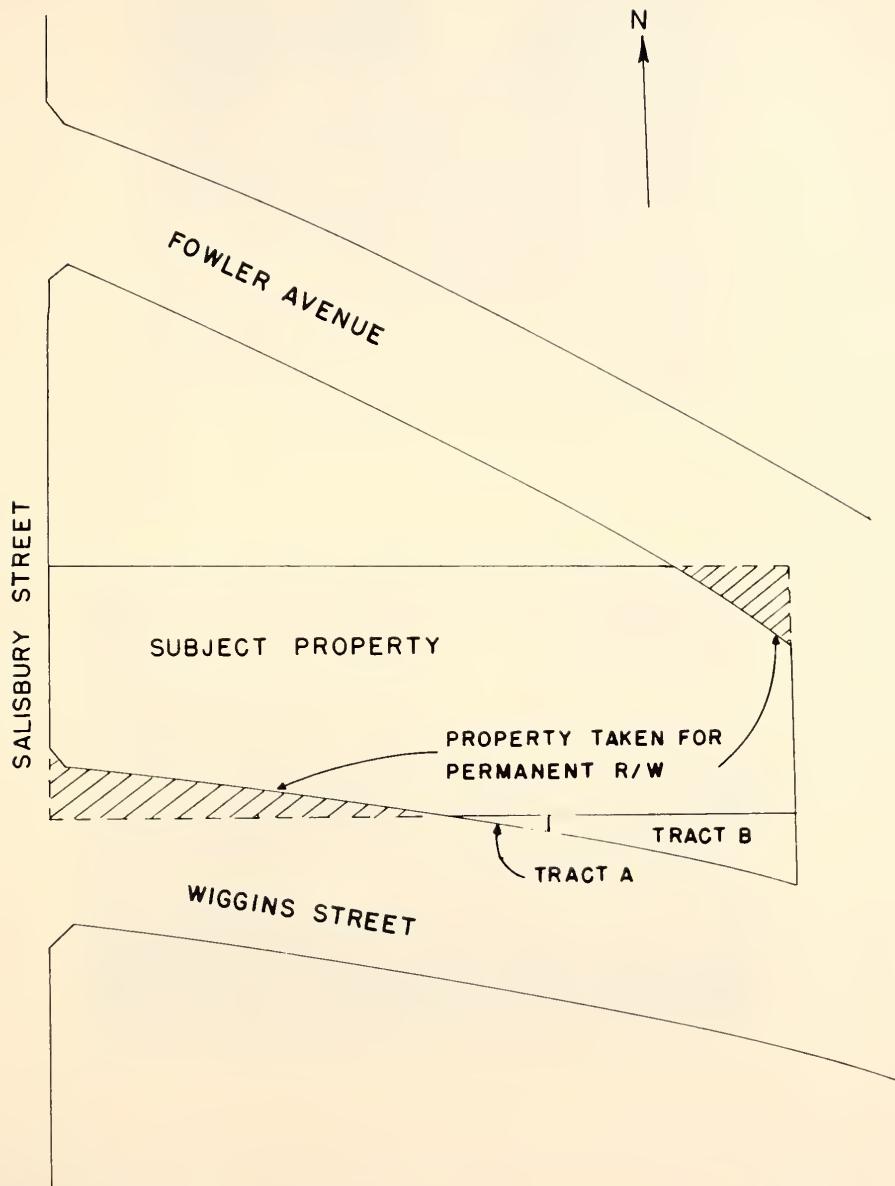


FIGURE 2-2 SUBJECT PROPERTY SHOWING RIGHT OF WAY TAKEN



BEFORE - JULY 1958



AFTER - OCT. 1967

FIGURE 2-3 PHOTOGRAHPS OF SUBJECT PROPERTY

Comparison of "After" Value and Sale Price

Average appraised "before" value	\$11,054
Amount of settlement	<u>3,500</u>
Apparent "after" value	\$ 7,554
Sale price	<u>21,750</u>
Difference	+ \$14,196

Summary

From this case study it is concluded that the land received a considerable enhancement since the apparent "after" value was much less than the amount the owner received in January 1964.

APPENDIX 3. CASE STUDY NO. 3

Location

The subject property fronts on Salisbury Street in the city of West Lafayette (see Figures 3-1 and 3-2).

"Before" Data

The property was a city lot on which a residence and garage were located. The property was tenant occupied.

Description of the Highway Improvement

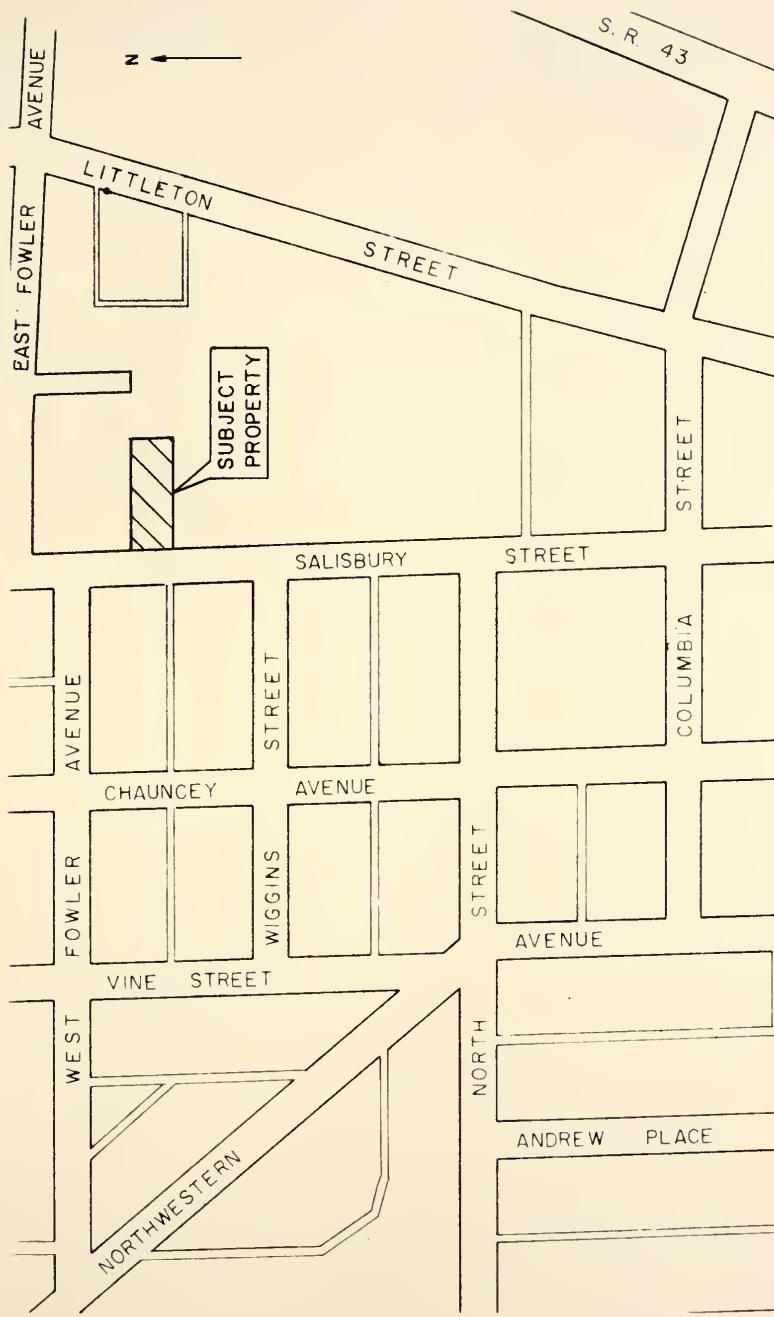
In 1959 to 1961 the William Henry Harrison Memorial Bridge, together with its approaches and connecting ramps, was constructed as a major traffic link between Lafayette and West Lafayette and as a new location for U.S. 231. The west approach to the Bridge is a four-lane divided highway. Access to the approach streets in the vicinity of the subject property is limited to the intersecting streets and connecting ramps. A control of access fence was constructed along the right of way line between the intersecting streets.

Part Taken

The entire property was appraised by two fee appraisers. Both appraisers valued the lot at \$3,450 while the high appraisal valued the improvements at \$9,600 and the low

THE STREET PATTERN EXISTING IN 1958 FOR A PORTION OF WEST LAFAYETTE

FIGURE 3-1



STREET PATTERN EXISTING IN 1961 FOR A PORTION OF WEST LAFAYETTE

FIGURE 3-2



at \$8,650. The following settlement was negotiated in
October 1958:

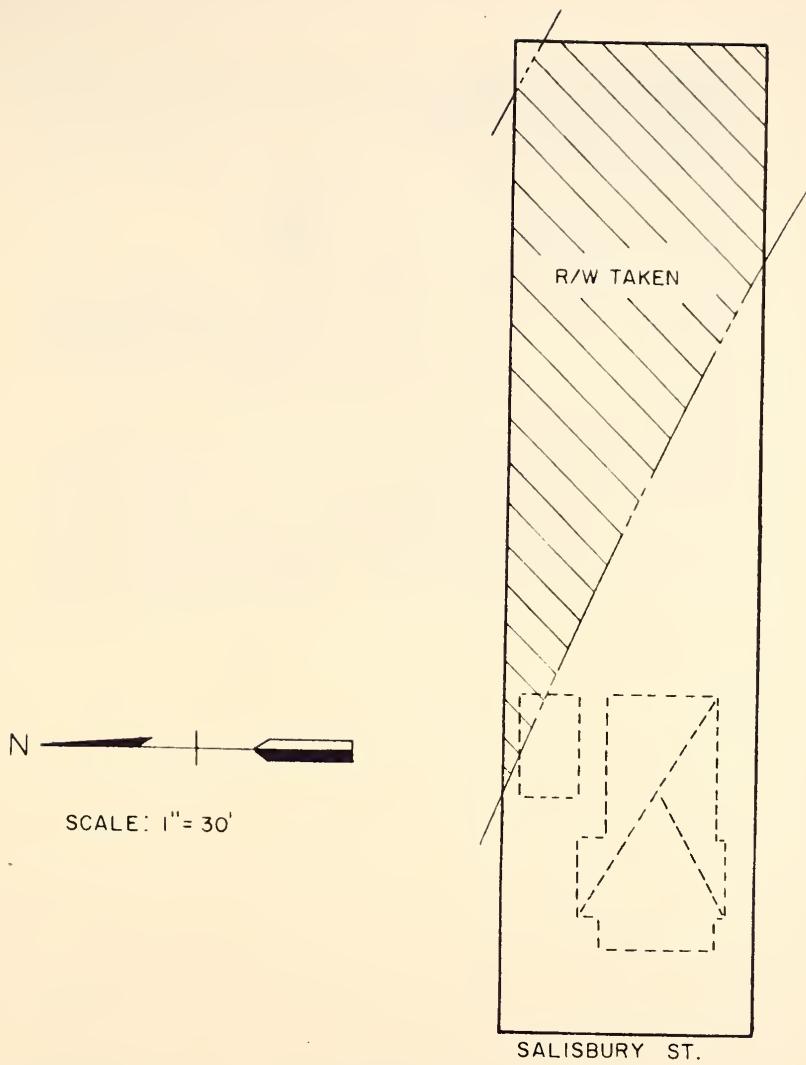
Land in permanent R/W	\$ 1,670
Improvements: house	\$ 9,285
garage	<u>325</u> 9,610
Damages due to shape and size	1,160
Other	<u>85</u>
Total paid for permanent take	\$12,525
Temporary R/W	<u>440</u>
Total Settlement	\$12,965

"After" Data

The remainder (see Figure 3-3) sold in December 1961 for an inferred price of \$2,500. In October 1963, the property was again sold for an inferred price of \$2,500. A two family single story building (see Figure 3-4) was then constructed on the property at an estimated cost of \$14,000. In January 1964, the house and land was sold for an inferred price of \$22,750.

Comparison of "After" Value and Sale Price

Average appraised "before" value	\$12,600
Amount of settlement	<u>12,525</u>
Apparent "after" value	\$ 75
Sale price	<u>2,500</u>
Difference	+\$ 2,425



PLAT OF SUBJECT PROPERTY SHOWING RIGHT-OF-WAY TAKEN

FIGURE 3-3



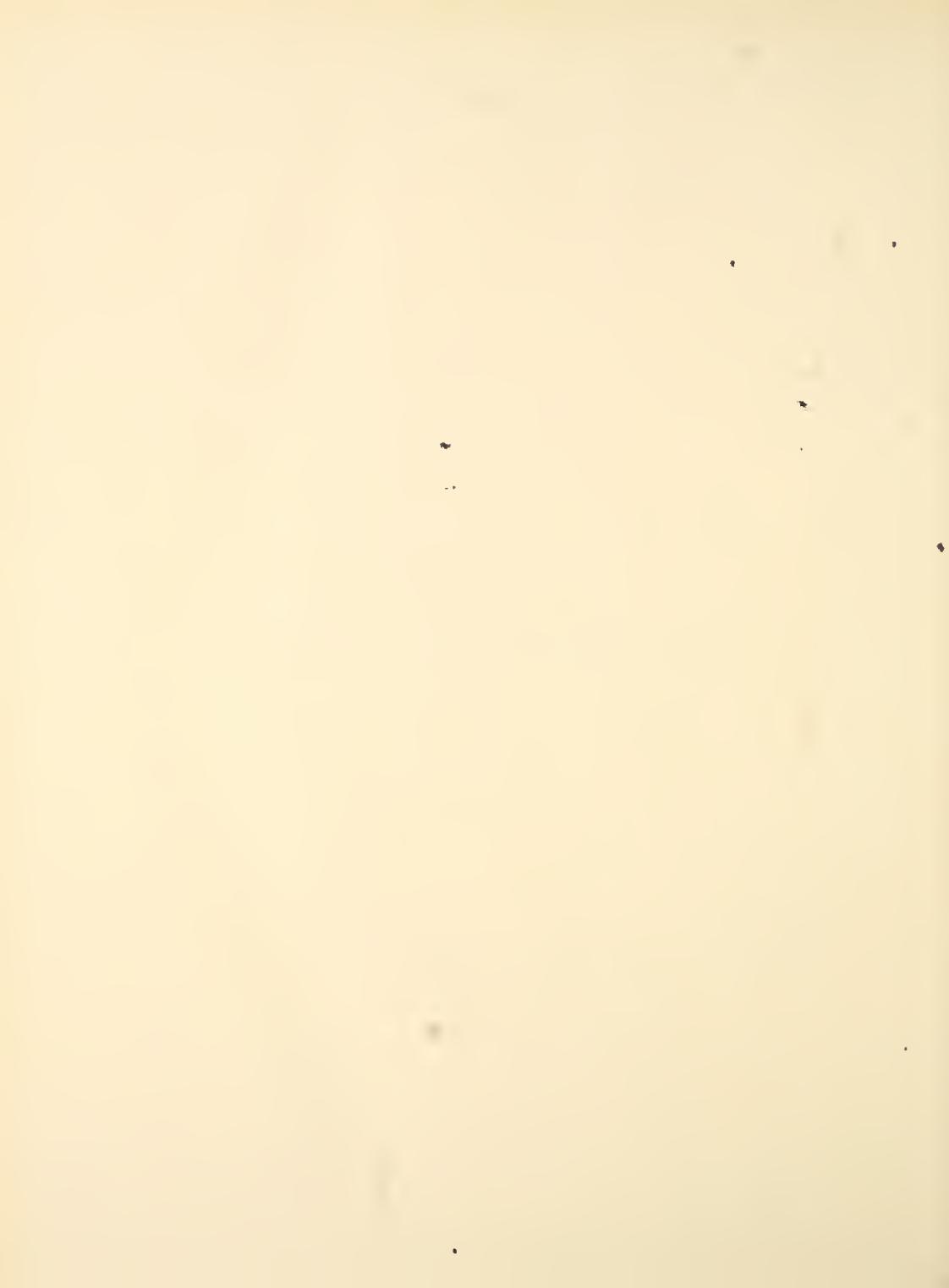
FIGURE 3-4 NEW BUILDING ON SUBJECT
PROPERTY

Summary

The land in this case study received a considerable enhancement in value since the difference between the apparent "after" value and the first sale price was \$2,425. This or even a greater increase in land value is indicated by the sale price of the land and \$14,000 house in 1964 for a total of \$22,750.



APPENDIX 4. CASE STUDY NO. 4



APPENDIX 4. CASE STUDY NO. 4

Location

The subject property is located on Littleton Street in the City of West Lafayette, Indiana (see Figures 4-1 and 4-2).

"Before" Data

The lot with residence was purchased in February 1956 for \$14,500. At the time of taking (1958) the residence was being used as income property.

Description of Highway Improvement

In 1959 to 1961 the William Henry Harrison Memorial Bridge together with its approaches and connecting roadways was constructed as a major traffic link between the cities of Lafayette and West Lafayette and as the new route for U.S. 231. The west approach to the bridge is a four-lane divided facility. Access to the approach streets in the area of the subject property is limited to intersecting streets and is maintained by a fence along the right of way between intersecting streets.

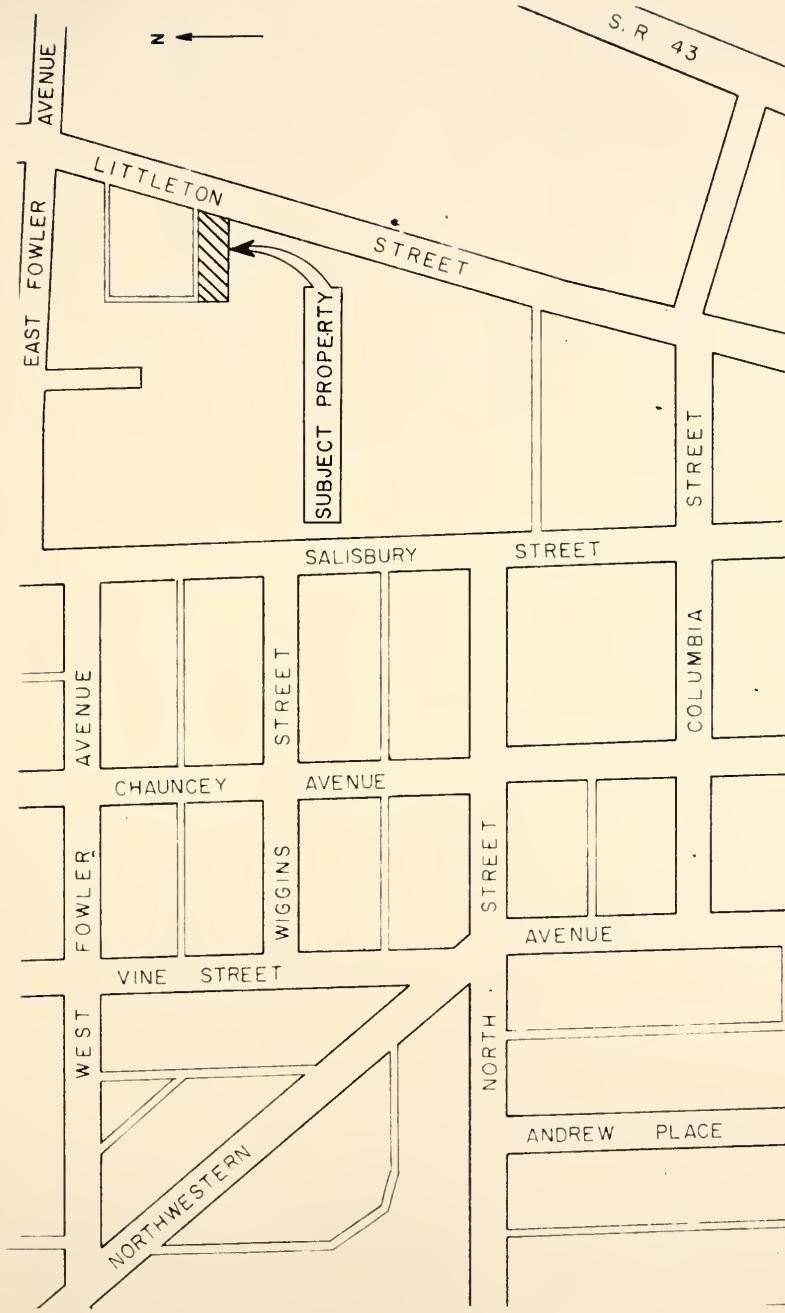
Part Taken

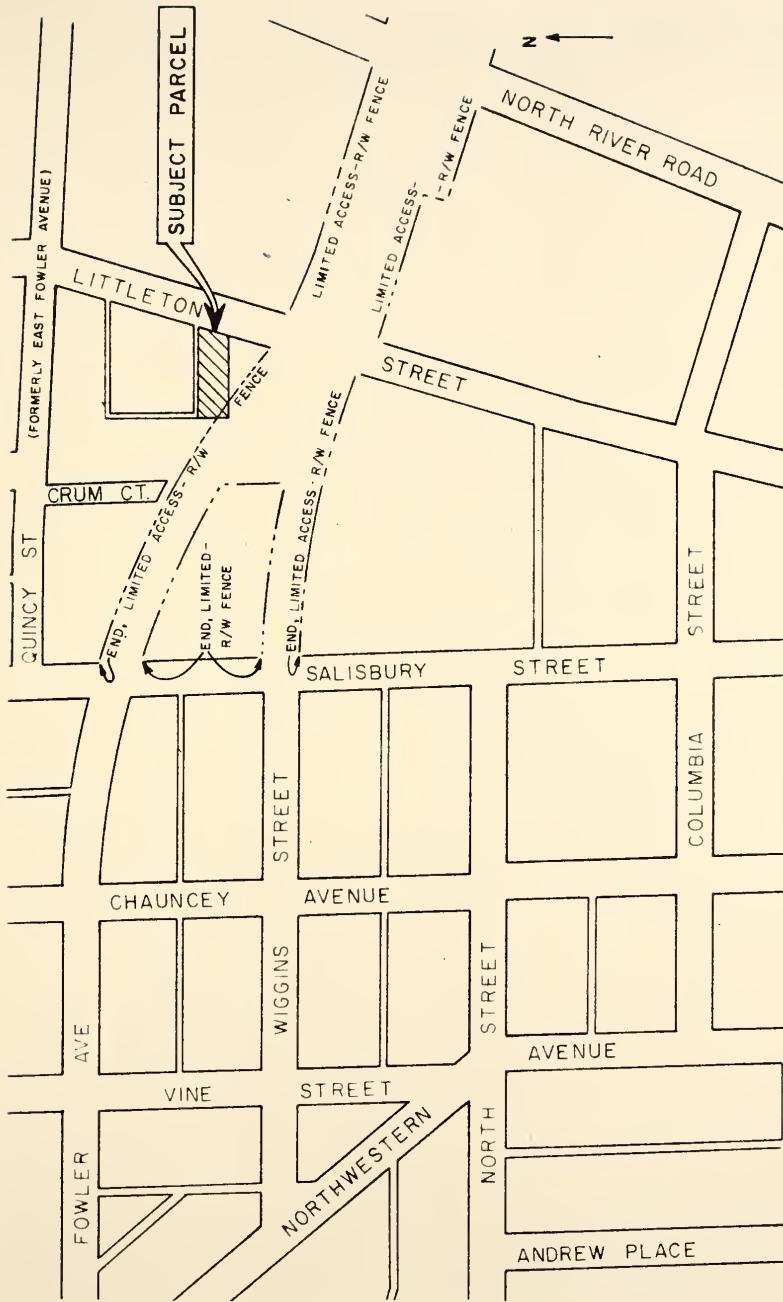
As a result of the procurement of the right of way for this highway improvement the subject property was appraised



THE STREET PATTERN EXISTING IN 1958 FOR A PORTION OF WEST LAFAYETTE

FIGURE 4-1





STREET PATTERN EXISTING IN 1961 FOR A PORTION OF WEST LAFAYETTE

FIGURE 4-2

in July 1958 at \$18,820 (land \$3,180 and improvements \$15,640) by a fee appraiser. The location of the improvements and the portion of the lot (129 square feet) acquired for permanent right of way is indicated in Figure 4-3. A final settlement in the sum of \$2,075 was made based upon the following:

Land in permanent R/W, 129 sq. ft.	\$ 51.72
Shrubs and trees	115.00
Damages: erection of limited access fence and proximity	<u>1,875.00</u>
Total paid for permanent take	\$ 2,041.72
Land in temporary R/W, 337 sq. ft.	<u>33.70</u>
Total	\$ 2,075.42

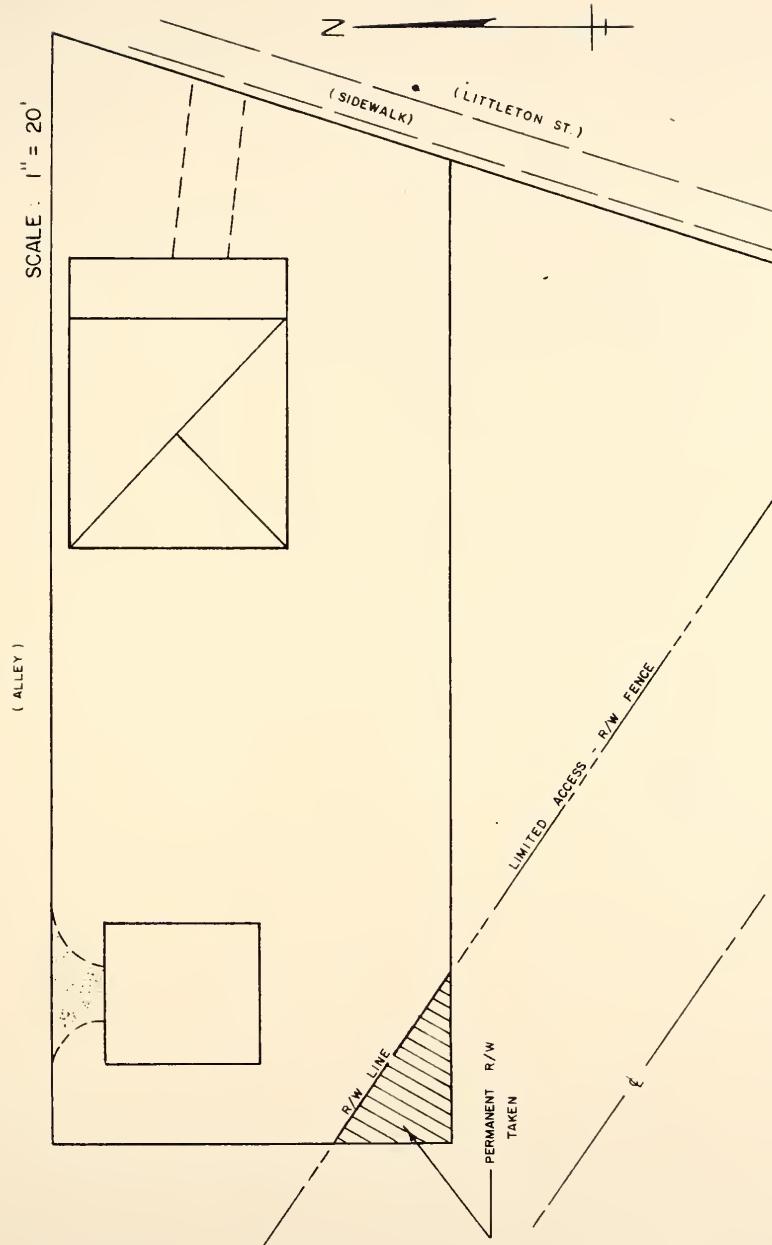
"After" Data

In July 1960 the remainder sold for \$15,500. The residence is being occupied by the new owners. The grantees stated that they feel that they purchased the property for a price that is lower than its true value because the former owners were most anxious to sell.

Comparison of "After" Value and Sale Price

Appraised "before" value	\$ 18,800
Amount of settlement	<u>2,040</u>
Apparent "after" value	\$ 16,760
Sale price	<u>15,500</u>
Difference	- \$ 1,200





SUBJECT PROPERTY SHOWING RIGHT - OF - WAY TAKEN

FIGURE 4-3

Summary

On the basis of the appraised "before" value, the remainder sold for \$1,200 less than the apparent "after" value.

APPENDIX 5. CASE STUDY NO. 5

APPENDIX 5. CASE STUDY NO. 5

Location

The subject property fronts on Salisbury Street in the city of West Lafayette, Indiana (see Figures 5-1 and 5-2).

"Before" Data

The property was a city lot on which a residence was located. The residence was being utilized as income property and rented for \$120 per month.

Description of Highway Improvement

In 1959 to 1961 the William Henry Harrison Memorial Bridge, together with its approaches and connecting ramps, was constructed as a major traffic link between Lafayette and West Lafayette and as a new location for U.S. 231. The west approach to the bridge is a four-lane divided highway. Access to the approach streets in the vicinity of the subject property is limited to the intersecting streets and connecting ramps. A control of access fence was constructed along the right of way line between the intersecting streets.

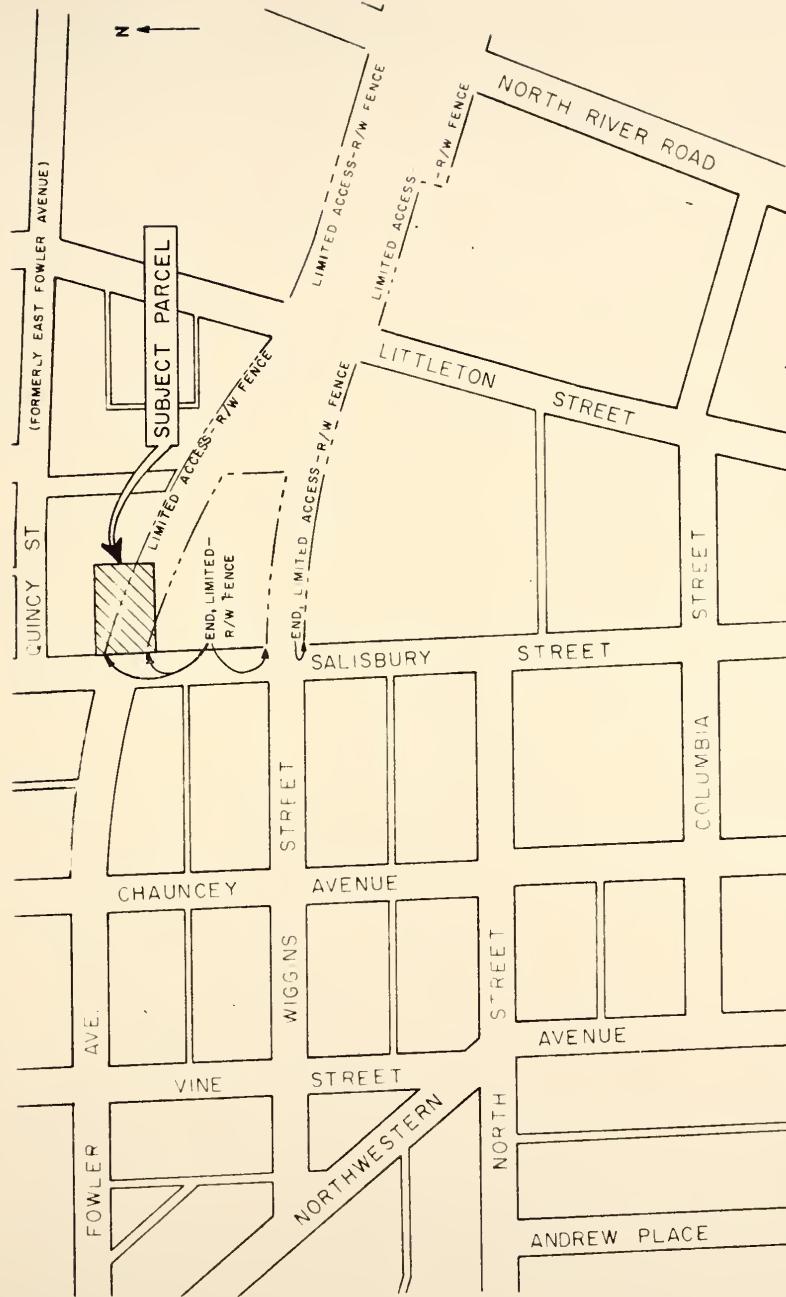
Part Taken

As a result of the procurement of right of way for this highway improvement the entire property was appraised



THE STREET PATTERN EXISTING IN 1958 FOR A PORTION OF WEST LAFAYETTE

FIGURE 5-1



STREET PATTERN EXISTING IN 1961 FOR A PORTION OF WEST LAFAYETTE

FIGURE 5-2

in 1958 by two fee appraisers. A summary of these appraisals is as follows:

Appraisal A Appraisal B

Land:

15,000 sq. ft. with 100 ft. front	\$ 5,947.00	\$ 5,950.00
--------------------------------------	-------------	-------------

Improvements:

1-1/2 story frame house with porch, plus garage less depreciation	\$ 20,640.00	\$ 20,643.55
	<u>10,732.00</u>	<u>10,343.55</u>
	<u><u>\$ 9,908.00</u></u>	<u><u>\$ 10,300.00</u></u>
Total Appraised Value	\$ 15,855.00	\$ 16,250.00

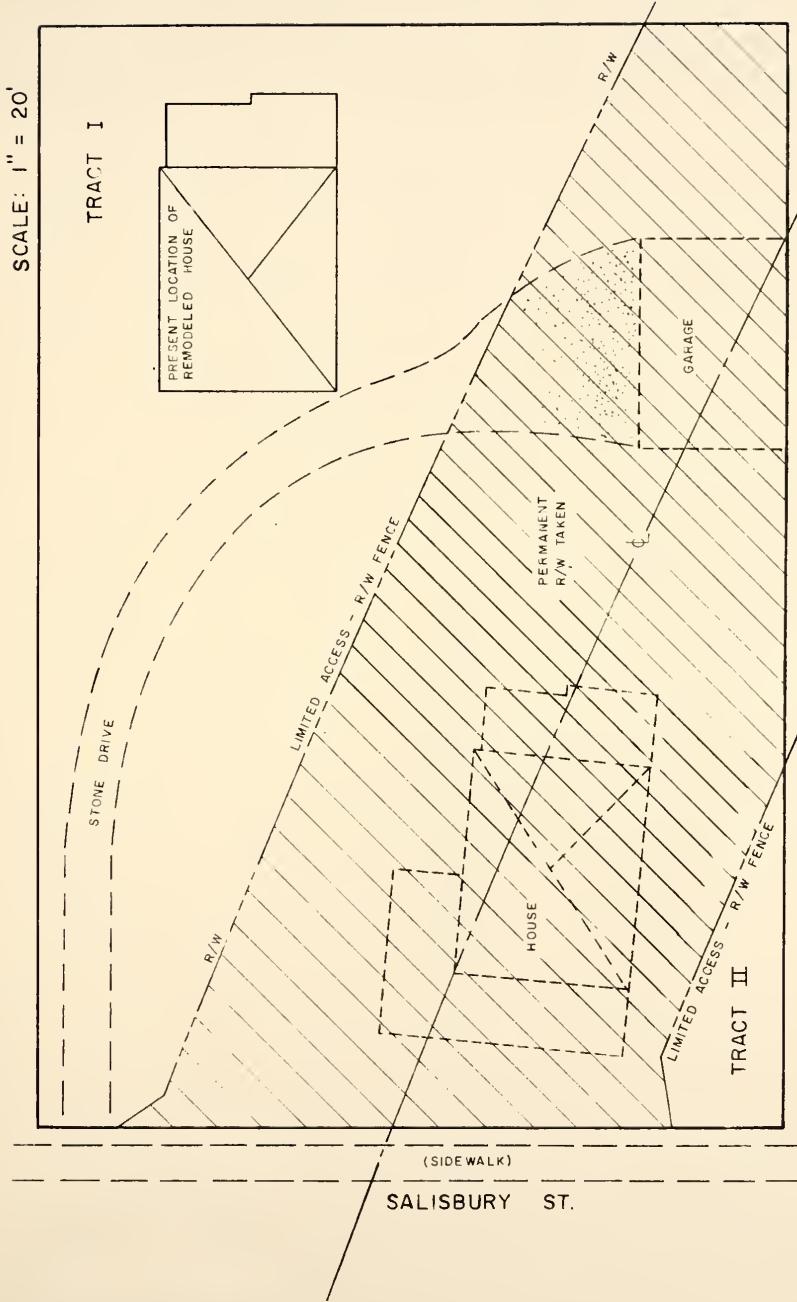
Figure 5-5 shows the lot and the location of the improvements thereon prior to the taking as well as the portion of the lot (approximately 50 percent) taken for permanent right of way. A final settlement in the sum of \$14,950 was made based upon the following:

Land in permanent R/W, 7,510 sq. ft.	\$ 2,894.00
Improvements (full value)	10,300.00
Damages: remainder due to shape	500.00
erection of a limited access fence	570.00
other	<u>319.00</u>
Total paid for permanent take	\$ 14,583.00
Land in temporary R/W, 3,674 sq. ft.	<u>367.00</u>
Total	\$ 14,950.00

"After" Data

Tract I of the remaining portion of the lot was sold in March 1959 for a stated price of \$500; this individual

SCALE: 1" = 20'



SUBJECT PROPERTY SHOWING RIGHT-OF-WAY TAKEN

FIGURE 5-3

also purchased the house from the state for \$940. After the house was relocated on the remaining portion of the lot and modernized, the property was sold for a stated price of \$15,000 in January 1961. The residence is presently occupied by the owners. The "after" situation is shown in Figure 5-4.

Tract II is very small and is considered to have no value.

Comparison of "After" Value and Sale Price

Average appraised "before" value	\$ 16,050
Amount of settlement	<u>\$ 14,950</u>
Apparent "after" value	\$ 1,100
Sale price	<u>500</u>
Difference	- \$ 600

Summary

In this case study the remainder (land only) sold for \$500; a price that is \$600 less than the apparent "after" value. Thus, a decrease in land value did occur.



PROPERTY LINE

PHOTOGRAPH TAKEN IN JULY 1961

PHOTOGRAPH OF THE SUBJECT PROPERTY AFTER
THE RESIDENCE WAS RELOCATED AND REMODELED

FIGURE 5-4

APPENDIX 6. CASE STUDY NO. 6

APPENDIX 6. CASE STUDY NO. 6

Location

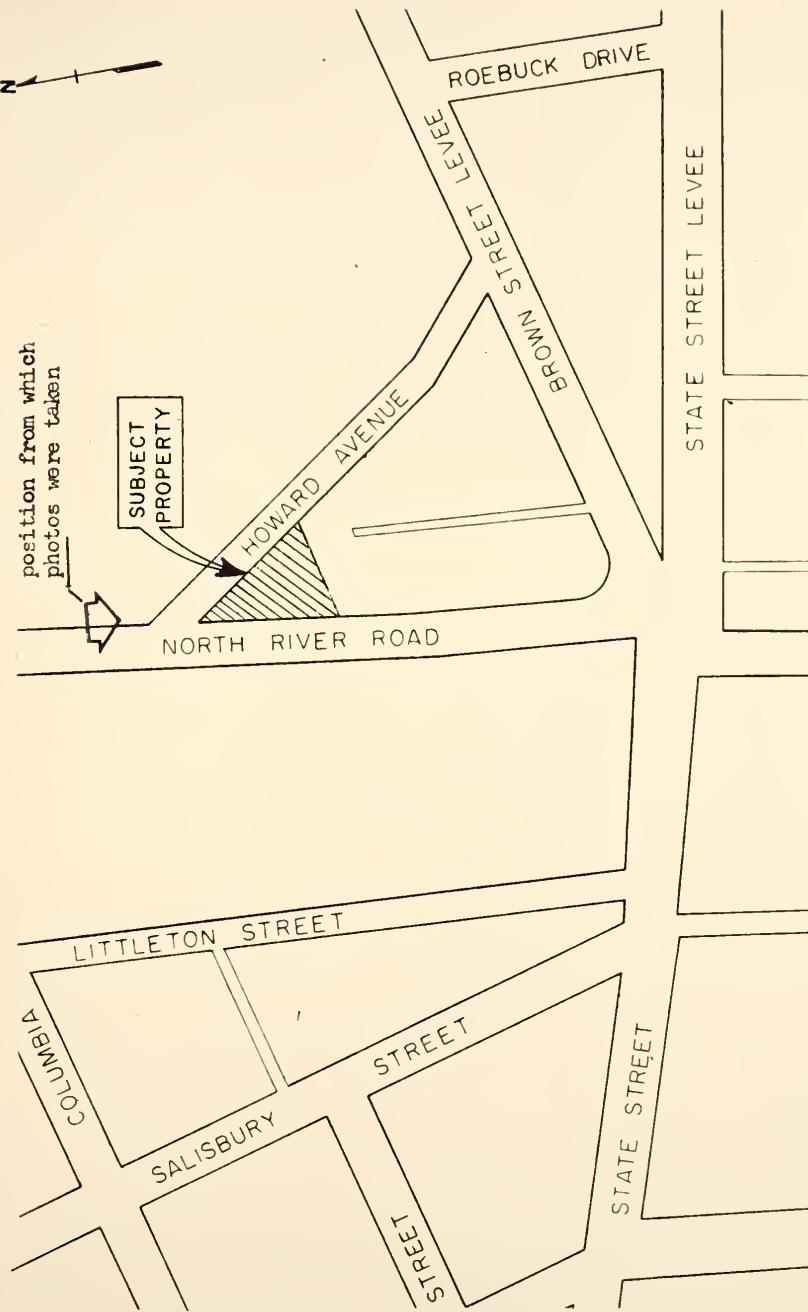
The subject property is situated at the intersection of Howard Avenue and North River Road (also SR 43) in West Lafayette, Indiana (see Figure 6-1).

"Before" Data

Title to the property was in the name of two different individuals; however, a large concrete block building occupied both lots and housed a single manufacturing enterprise which produced custom made cabinets. A photograph of the property is shown in Figure 6-4.

Description of Highway Improvement

In 1959 to 1960 the intersection of Howard Avenue and North River Road was reconstructed in connection with the construction of the William Henry Harrison Memorial Bridge. Improvement of Howard Avenue also consisted of improved drainage and new pavement while North River Road was reconstructed as a four-lane divided highway; both facilities were constructed with no control of access in the vicinity of the subject property.



STREET SYSTEM IN THE VICINITY OF THE SUBJECT PROPERTY

FIGURE 6-1

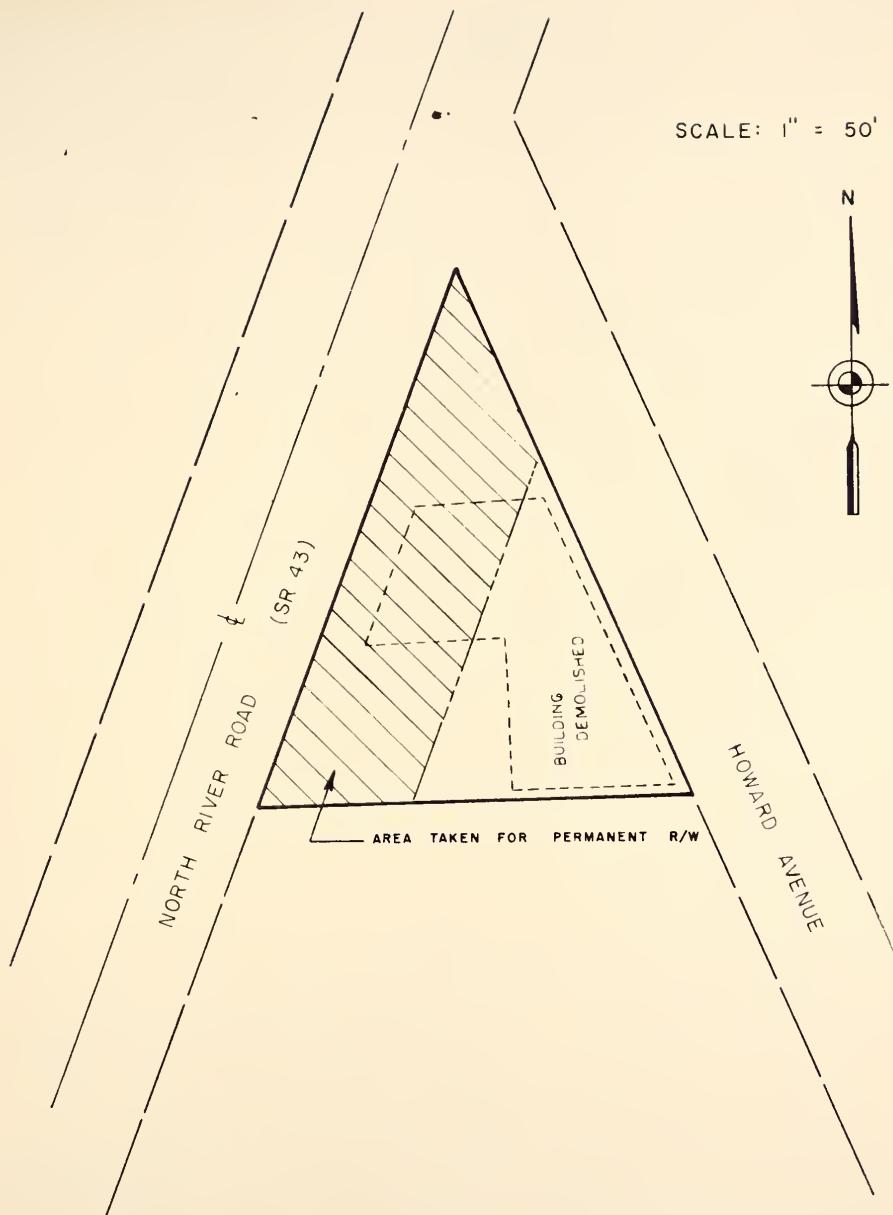
Part Taken

As a result of the acquisition of right of way for the reconstruction of the intersection, two appraisals were made of the property in July of 1958; these fee appraisals are summarized below:

	<u>Appraisal A</u>	<u>Appraisal B</u>
Land: 12,778 sq. ft.	\$ 12,778.00	\$ 12,778.00
Improvements:		
6,400 sq. ft. concrete block bldg.	\$57,600.00	\$55,125.00
less depreciation	<u>5,760.00</u>	<u>5,512.00</u>
depreciated value	\$ 51,840.00	\$ 49,613.00
other improvements	<u>1,150.00</u>	<u>1,800.00</u>
Total Appraised Value	\$ 65,768.00	\$ 64,191.00

The shape of the original parcel and the portion (7,900 square feet) of it taken for right of way is indicated in Figure 6-2. Both state appraisals considered the improvements to be a total take; appraisal A valued the residual (land) at \$4,557 while appraisal B valued it at \$4,387. The state's offer based upon these appraisals was rejected. However, a final settlement was made out of court in November 1958 for the sum of \$61,491 as follows:

Land in permanent R/W, 7,900 sq. ft.	\$ 7,901.00
Improvements	<u>53,590.00</u>
Total	\$61,491.00



SUBJECT PROPERTY SHOWING RIGHT-OF-WAY TAKEN
FIGURE 6-2

"After" Data

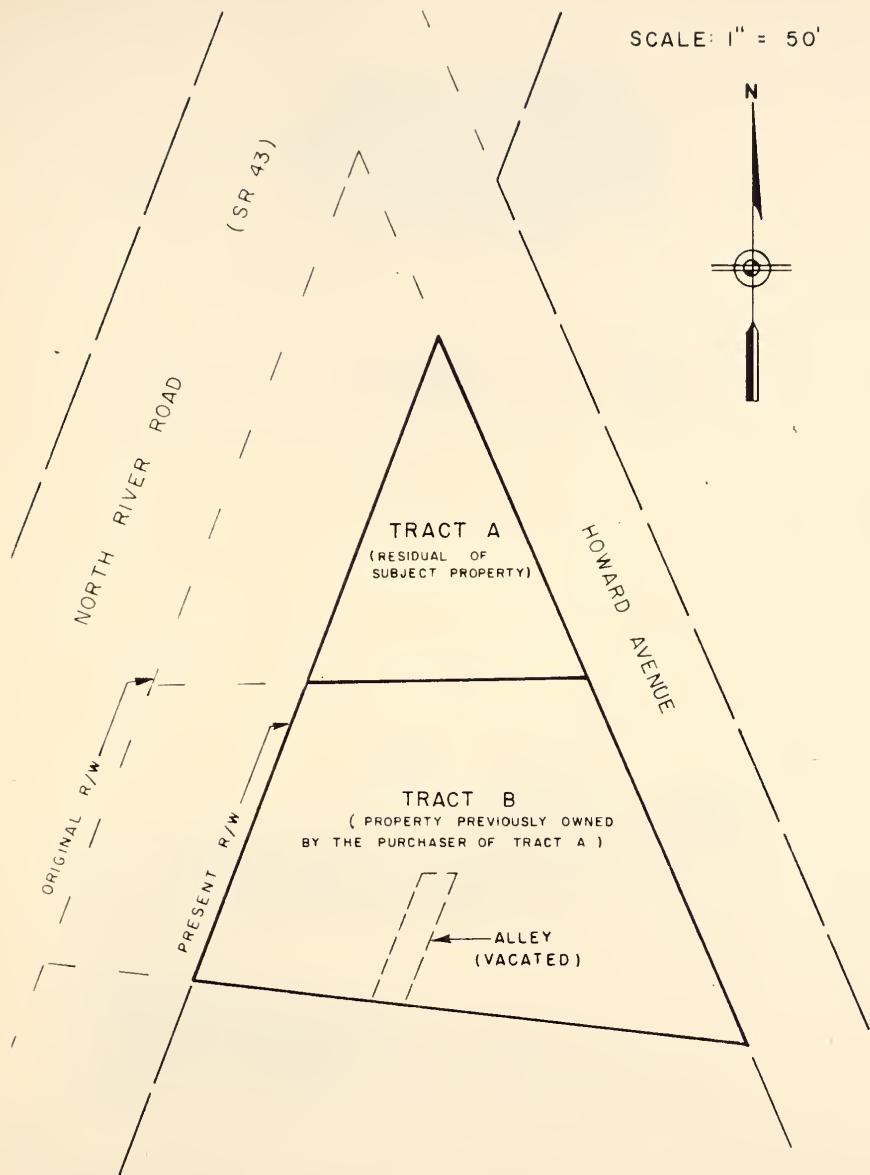
The residue (land) was sold in September 1959 for a price of \$13,000. This property was combined with the residual portion of the adjacent tract which the grantee already owned. A service station and a car wash were subsequently constructed on the combined properties. Tract A shown in Figure 6-3 is the residue that was purchased in September 1959; Tract B is the residue of the adjacent property which the individual already owned. A photograph of the new service station is shown in Figure 6-4 and a photograph of the new car wash is shown in Figure 6-5.

Comparison of "After" Value and Sale Price

Average appraised "before" value	\$ 65,000
Amount of settlement	<u>61,500</u>
Apparent "after" value	\$ 3,500
Sale price	<u>13,000</u>
Difference	+ \$ 9,500

Summary

Ten months after the settlement was made (14 months after the property was appraised) the residual land sold for \$13,000 -- a sum that exceeds the apparent "after" value by \$9,500. Thus, this case study shows an increase in land value.



LOCATION OF THE RESIDUAL PORTION OF THE SUBJECT PROPERTY
AND THE PROPERTY ALREADY OWNED BY THE GRANTEE

FIGURE 6-3



PHOTOGRAPH TAKEN IN JULY 1958

BEFORE



PHOTOGRAPH TAKEN IN JULY 1961

AFTER

PHOTOGRAPHS OF THE SUBJECT PROPERTY BEFORE
AND AFTER THE TAKING FOR ADDITIONAL RIGHT-OF-WAY

FIGURE 6-4



FIGURE 6-5 CAR WASH ERECTED ON
SUBJECT PROPERTY

APPENDIX 7. CASE STUDY NO. 7

APPENDIX 7. CASE STUDY NO. 7

Location

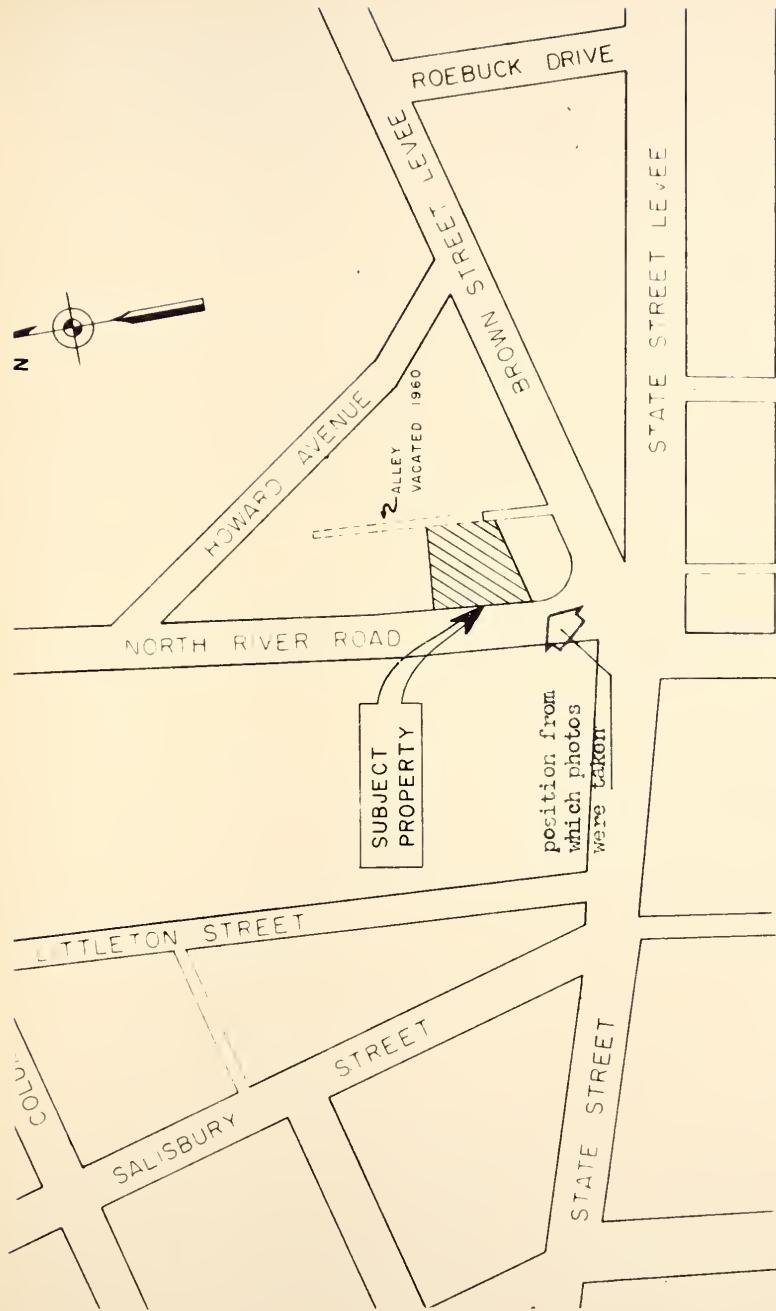
The subject property fronts on North River Road (also State Road 43) in West Lafayette. The existing street system is shown in Figure 7-1.

"Before" Data

Prior to the taking a residence was situated on each of the lots. One house and the lower story of the other rented for a total of \$135 per month; the owners occupied the upper story of the second house. The property was located in a commercial area and was situated between two business establishments. The area was zoned commercial. Photographs of the residences as they existed prior to the taking are shown in Figure 7-3.

Description of Highway Improvement

In 1959 to 1960 North River Road was reconstructed, in connection with the construction of the Harrison Bridge, as a four-lane divided highway without control of access in the vicinity of the subject property. A median barrier however limits access to the north bound roadway.



STREET SYSTEM IN THE VICINITY OF THE SUBJECT PROPERTY

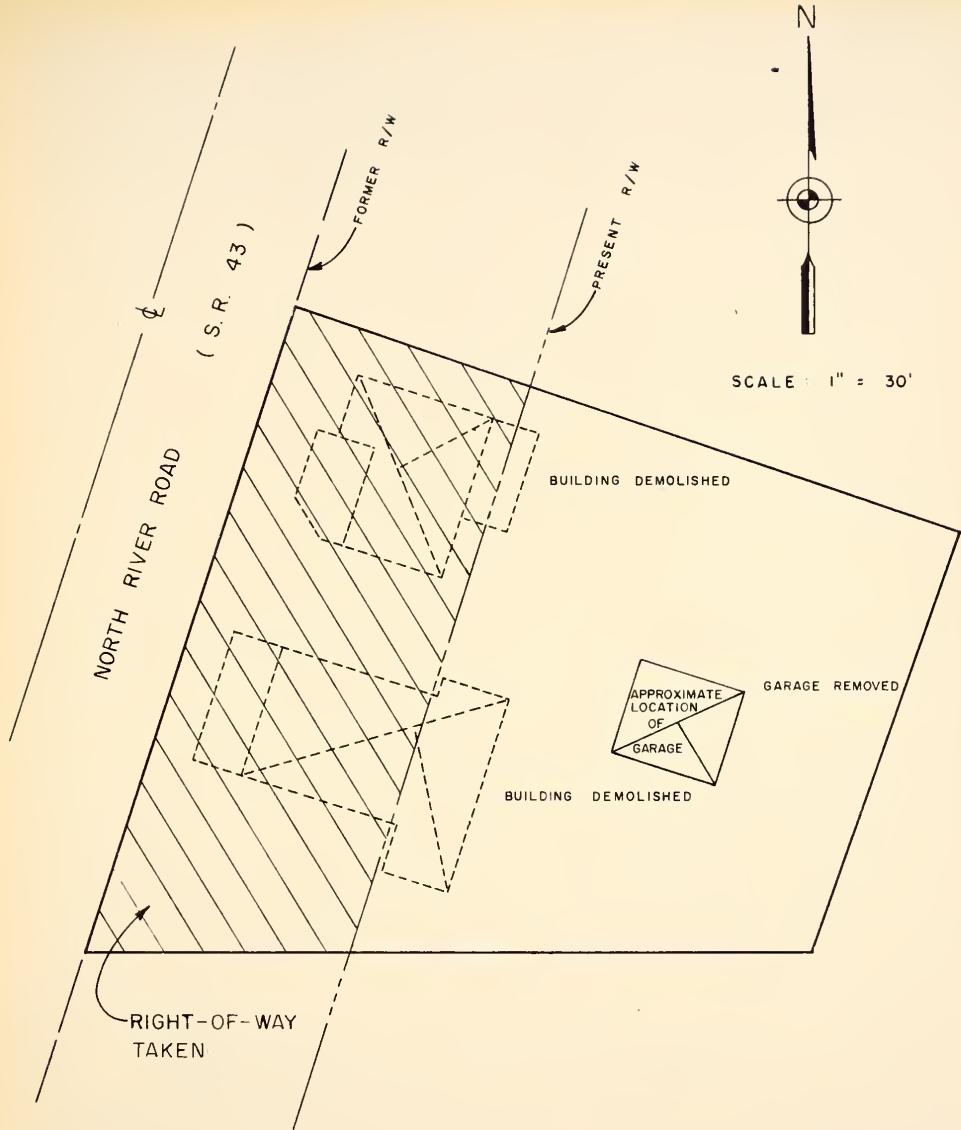
FIGURE 7-1

Part Taken

Two appraisals of the entire property were made in July 1958 in conjunction with the acquisition of right of way for this facility. These two fee appraisals are summarized as follows:

	<u>Appraisal A</u>	<u>Appraisal B</u>
Land: 12,540 sq. ft.	\$ 9,405.00	\$ 9,405.00
Improvements:		
2 story brick house porch and full base- ment, 50-60 years old	\$31,184.00	\$27,146.00
less depreciation	<u>18,646.00</u>	<u>17,645.00</u>
	\$ 11,538.00	\$ 9,501.00
2 story frame house porch and full base- ment, 50 years old	\$19,067.00	\$25,962.00
less depreciation	<u>9,914.00</u>	<u>10,783.00</u>
	\$ 9,153.00	\$ 15,179.00
septic system, garage and other	<u>2,130.00</u>	<u>3,272.00</u>
Total Appraised Value	\$ 32,226.00	\$ 35,357.00

Figure 7-2 shows the location of the improvements on the lots and the portion of the lots taken for right of way. Both appraisers considered the improvements to be a total take (except for the garage, for which both allowed 50% damages). Appraisal A valued the residue at \$4,153 while appraisal B valued it at \$5,653. The property owners rejected the state's offer based upon these appraisals; however, a settlement was reached out of court in December



SUBJECT PROPERTY SHOWING RIGHT - OF - WAY TAKEN

FIGURE 7-2

1959 for the sum of \$30,704, approximately \$1,000 more than the take and damages as appraised by the high state appraisal. This settlement is summarized below:

Land in permanent R/W, 5,960 sq. ft.	\$ 4,470.00
Improvements: 2 story brick house	10,433.00
2 story frame house	13,189.00
other	425.00
Damages: to garage	990.00
other	<u>1,197.00</u>
Total Take and Damages	\$30,704.00

"After" Data

The remainder was sold for \$9,000 in May 1961. The grantee already owned the adjacent property on the north, east, and south sides of the subject property. The alley servicing the rear of the subject property was subsequently vacated. A photograph of the property taken in November 1961 is shown in Figure 7-3. In 1963, a motel with 47 units was constructed on the combined properties (see Figure 7-4).

Comparison of "After" Value and Sale Price

Average appraised "before" value	\$33,800
Amount of settlement	<u>30,700</u>
Apparent "after" value	\$ 3,100
Sale price	<u>9,000</u>
Difference	+ \$ 5,900



PHOTOGRAPHS TAKEN IN JULY 1958

BEFORE



PHOTOGRAPH TAKEN IN NOVEMBER 1961

AFTER

BEFORE AND AFTER PHOTOGRAPHS OF THE SUBJECT PROPERTY

FIGURE 7-3



FIGURE 7-4 MOTEL ON SUBJECT PROPERTY

Summary

This case study shows that the land received a considerable enhancement. The difference between the apparent "after" value and the sale price was \$5,900.

